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'WHOLESALE SELLING' BLAMED ON 'EXTRA' DEALERS IN SOUTHWEST

Crosley Makes Absorption Unit Using Kerosene

New Refrigerator Is Complete In Itself, Easy To Operate

CINCINNATI—A new absorption-type, kerosene-operated refrigerator of 6-cu. ft. capacity, carrying the Shelvador feature and known as the "Flame-Freeze," has just been announced by Crosley Corp.

Designed particularly for use in homes, restaurants, and camps away from power lines, the unit is said to operate at a cost of between 3 and 7 cents a day for kerosene.

Food compartment of the Flame-Freeze is porcelain lined, and has an acid resisting bottom. Cabinet is of Bonderized steel, finished in Dulux.

Interior shelf area is 10½ sq. ft., Nema rating, and the unit has one deep and one shallow ice tray, with a freezing capacity of 63 cubes or 5 lbs. of ice at a time. Shelves are removable, and one is hinged for easier storage of tall bottles. Shelvador is standard equipment.

Refrigerating unit has no moving parts. The unit is complete in itself, and can be used anywhere, no outside connections being necessary.

With the application of heat to the generator, the refrigerant is driven off as a gas to the large condenser tank, where the gas is liquefied and trickles by gravity to the evaporator receiver. After the fuel supply is exhausted, the generator cools rapidly, allowing the absorption solution to absorb the ammonia vapor which vaporizes in the evaporator at low temperatures, thus freezing ice cubes and producing refrigeration in the food compartment.

Special fuel level indicator is furnished to indicate the quantity of

(Concluded on Page 20, Column 3)

New Plan Offered To Reorganize Grunow Co.

CHICAGO—A suggested plan for reorganization of the financial affairs of General Household Utilities Co., including a provision that it will engage in the electric refrigeration business exclusively, has been reported to creditors of the company by their creditors' committee.

The reorganization plan, the committee reports, will provide that all unsecured creditors shall receive prior preferred stock, with a par or stated value in an aggregate amount equal to the full amount of their claims. The stock is to be issued either by the present organization or by a new corporation which may be organized to take over the assets of the present

(Concluded on Page 20, Column 2)

Fred Cross Appointed Alemite Sales Head

CHICAGO—Fred R. Cross has been appointed sales manager for the Alemite retail sales division of Stewart-Warner Corp., effective May 15.

Mr. Cross has been connected with Stewart-Warner for the past 15 years. Appointed in 1924 as advertising manager for the Alemite division, he held that position until 1933, when he was placed in charge of all advertising for Stewart-Warner and its subsidiaries, a post he held until his present promotion.

C. A. Fine, former head of the Alemite retail sales division, will assume new duties to be announced later.

Illinois Utilities To Act on Charges Of Unfair Selling

CHICAGO—Development of a program of cooperation with dealers throughout the state, including action on dealers' complaints of unfair competition for appliance sales, is the goal of a committee just named by Illinois public utility companies.

Appointment of the committee follows a suggestion made a year ago by the Illinois Federation of Retail Associations, voicing the need for an investigation of alleged "unfair competitive practices." At the time it made the suggestion, the association also expressed the hope that dealers would move to "clean their own houses."

Utility interests in the state have been giving the matter thorough investigation, and are said to have done a number of things looking to better utility-dealer relationships. Executives named on the committee are:

Chairman, G. A. Freeman, assistant to vice president in charge of sales, Commonwealth Edison Co.,

(Concluded on Page 19, Column 3)

Sees Distributor's End Unless Poor Dealers Are Eliminated

MILWAUKEE — Unless distributors adopt a long-range program aimed at quality rather than quantity of outlets, the entire distribution set-up of major appliances, particularly refrigerators, may fold up, in the opinion of Herman Burbank, business representative of the Household Furniture & Appliance Sales and Service Men's Union here.

While his remarks were aimed primarily at the local situation, the union official implied that they might be extended to the country as a whole.

Distributors want to place their merchandise into every possible outlet, but at the same time they want the sort of dealers who will stay in business and pay their bills. The union is seeking the same goal, but from another angle, in that its aim is to see that every dealer and salesman makes a fair living.

(Concluded on Page 19, Column 1)

3-Day Spring ASRE Meeting Opens May 21

HERSHEY, Pa.—Opportunity for first-hand inspection of some interesting installations of refrigeration and air-conditioning equipment will be afforded industry men who attend the twenty-sixth meeting of American Society of Refrigerating Engineers here May 21 to 23.

A tour of Hershey is scheduled for the afternoon of May 22, at which convention-goers will inspect the cooling equipment used in the manu-

(Concluded on Page 19, Column 2)

Dealers Cooperating on Used Box Problem

The Quaker City Plan

PHILADELPHIA — Distributors and dealers here may have their squabbles over competitive problems, but there's one thing they're pretty well agreed on—the "Philadelphia plan" on refrigerator trade-ins works.

After six months' operation, the reconditioning plant set up in connection with the city's "blue book"

(Concluded on Page 8, Column 4)

'Schedules' In Franchises?

CHICAGO—Schedules of "reasonable" trade-in allowances should be a definite part of every dealer franchise, in the opinion of J. G. Strader, executive secretary of the Illinois Radio & Electrical Dealers Association.

Failure of distributors to include such schedules in their dealer agreements, Mr. Strader believes, is perhaps the greatest hindrance to vigorous enforcements of the trade-

(Concluded on Page 8, Column 3)

Rent 'Em In Milwaukee?

MILWAUKEE—How to handle the trade-in problem is already becoming a matter of concern with Milwaukee refrigerator dealers, notwithstanding the fact the best estimates place the saturation point in this area at somewhere between 30 and 35%.

It is generally conceded that the trade-in problem does not become

(Concluded on Page 8, Column 3)

Bard Heads Norge Air Conditioning, Commercial Sales

DETROIT—Malcolm T. Bard has been appointed sales manager of the Norge commercial refrigeration and air-conditioning department, and C. L. Toonder has been named commercial sales engineer.

These appointments fill positions vacated when Walter E. Landmesser and Dean Seitz left Norge to join York's commercial refrigeration and air-conditioning department.

Mr. Bard has been assistant sales manager of the department since 1937.

(Concluded on Page 20, Column 5)

Universal Cooler Unit Made For Use In Hot Air Systems

DETROIT—A new self-contained air-cooling package unit, designed for use in connection with residential warm air furnaces and winter air-conditioning systems, has been announced by Universal Cooler Corp.

Built in 2 and 3-hp. condensing unit sizes, the unit contains direct-expansion cooling coils and a refrigerating machine enclosed in a cabinet ready for connection to the furnace duct system. A pancake type double-tube water-cooled condenser is employed.

By connecting the air-conditioning cabinet to the return air supply system, the furnace fan is used for air circulation. The cabinet, which sits on the basement floor, will be

(Concluded on Page 18, Column 3)

Carrier Places Big Jobs In 11 States Under Gay

LOS ANGELES—Gay Engineering Corp. has been appointed representative of Carrier Corp. in the 11 western states to handle air-conditioning and refrigeration installations larger than those for which local dealers may be franchised.

In Los Angeles county, Gay Engineering has been given exclusive sales and installation rights for all Carrier air conditioning, refrigera-

(Concluded on Page 19, Column 1)

Too Many Cooks Spoil the Broth, Distributors Find

'Wholesale To All' Prices Follow Overcrowding Of Dealer Field

By Phil B. Redeker and Robert Price

OKLAHOMA CITY, Okla.—Blame for tail-spinning refrigerator prices, prevalence of "wholesale prices to all," sky-high trade-in allowances, and all the accompanying evils of unethical selling practices said to be so prevalent in the Southwest, is placed right at the door of the dealer by many appliance men, who charge that there are far too many dealers in the territory.

As the number of appliance retailers increased, there was staged a competitive war that saw prices being pushed far below the danger line in the wild effort to make deals—and profit be hanged. Out of this over-crowded situation grew a willingness to meet any and all demands for special discounts, according to the report, with little or no attempt by most of the dealers to control the trend toward "wholesale" prices which proved so disastrous to profits.

Distributors and manufacturers come in for their share of the blame. It is claimed that distributors heeding the cry of "more volume" issued by the manufacturers forced themselves and their retail outlets further into deep water by taking on more dealers in the attempt to maintain volume.

Now, as the unbalancing effect of heated trading has forced prices down and dealers and distributors to the wall of red ink, nearly everyone engaged in the electrical appliance industry in this section is apparently willing to say "uncle" and accept the stabilizing relief that, they say, must come from a weeding out of weak dealers and a strict policing of the remaining outlets by distributors and manufacturers alike.

Saturation of refrigerators in the Oklahoma City area has been high, standing now at about 70%, according to the report. During January and February, however, the sale of refrigerators was said to be only .4 of 1% off the first two months of 1938. Other appliances are off more than electric refrigerators. Washers are down 13%, ironers down 15%, while on the other side of the ledger, electric roasters are up 28%.

Most at fault for the purchaser being able to buy at a large discount is the dealer, believes Paul Hoheisel, executive of the Oklahoma Gas & Electric Co. Having little or no ethics in selling and often in need of money to keep going "a little longer to tide me over" the dealer has so educated the buyer to expecting a repeated lowering of price that by this time the buyer dictates and the dealer obeys.

Mr. Hoheisel thinks that the distributor is not the one to step in and regulate the dealer. He pointed out that the whole merchandising structure—from the manufacturer on down—is imbued with the idea of volume. As the manufacturer dumps refrigerators onto the distributor, this volume must be pushed out through dealer outlets.

Distributors are very often forced to accept dealers that are soon sucked under by the force of competition. The tiny leak of the first wholesale sale to a purchaser of a refrigerator widened to include a great number of sales, Mr. Hoheisel explained. But as one dealer failed in the press, instead of looking for the reason, the distributor, at the

(Continued on Page 6, Column 1)

G-E Man Joins All-Industry Exhibition Committee

Harold Hulett (second from right), manager of General Electric's commercial refrigeration department, has joined the exhibition committee of the Refrigeration Equipment Manufacturers Association (Rema). Hulett is the first representative of the Nema group of complete equipment manufacturers to become a member of the committee which is planning the Second All-Industry Refrigeration and Air Conditioning Exhibition. Members of the committee pictured above are (left to right) A. Schellenberg of Alco Valve, K. B. Thorndike of Detroit Lubricator, M. W. Knight of Peerless, Hulett, and F. J. Hood of Ansul. Mr. Knight, chairman of the committee, announces that both Kelvinator and General Electric have signed for double spaces in the Exposition in Chicago next January, and that other manufacturers of complete units are expected to exhibit.

HOME REFRIGERATION REVOLUTIONIZED!

Crosley now presents a Refrigerator for the replacement market that gives women a good excuse to discard their old models

Crosley provides two-temperature and air conditions in two compartments of the newly developed FREEZORCOLD Shelvador. In one compartment a uniform below-freezing temperature is maintained—a dry sharp cold that keeps fresh meats or game as long as family needs demand—enables women to buy frozen foods at "Special" sales and store until wanted—keeps ice cream firm and solid—permits them to make and store ice cubes against the biggest kind of a party—makes possible a full larder AT ALL TIMES for unexpected guests.

This is not a Refrigerator with a Partition in it

Fast-frozen foods are rapidly becoming a definite part of the American diet—primarily because of convenience, for they are now in nearly every grocery store. There is no waste in their use.

Game and fish are two foods hard to keep in the home because of limitations of available refrigeration—but NOW in the sub-freezing compartment of FREEZORCOLD a temperature is provided that's low enough to retard physical change in these delicacies for many days.

Pie dough is a delicate material—prepared best when utensils and

CROSLEY
TWO TEMPERATURE FREEZORCOLD SHELVADOR

ingredients are very cold. The FREEZORCOLD SHELVADOR enables the delighted cook to prepare materials at temperatures heretofore unavailable in the kitchen. Once made, her shortened dough can be kept over a long period of time—in any quantity in the FREEZORCOLD freeze compartment.

Ice cream is not only easily made in this freeze compartment, but can be kept indefinitely. No more running down to the store just before meal time to get the ice cream home in right condition. Also, you can make and store many pounds of ice cubes.

THE CROSLEY SHELVADORS

are a perfect "step up" line of refrigerators.

Beginning with the 3 ft. "SPECIAL" at $99.50 you can lead the prospect through the lowest priced quality refrigerators on the market to the "REGULAR" fully equipped line which matches competition's "Stripped" models in price on up through the "DELUXE" Shelvadors of which there is nothing finer at any price, and into the NEW and UNMATCHABLE FREEZORCOLDS in 4 models.

New Low Temperature with high humidity provides improved food preservation heretofore unknown in the home

The second compartment is moist, air conditioned cold storage to hold cooked foods, vegetables, fruits, etc., at the peak of their perfection. "So you retard the drying out of food in electric refrigerators?" exclaim excited housewives. Yes, because the drying out of the natural juices in the food is retarded. Thus vegetables remain prime for days, chilled delightfully crisp in the cold humid air, retaining their original vitamins—keeping moist and garden fresh with no discoloration for days longer than

FLAME-FREEZE SHELVADOR

Modern Refrigeration for Homes without Electricity

Farm and country homes beyond the power lines can now enjoy economical food protection with the matchless convenience and beauty of Crosley Flame-Freeze Shelvadors. Produces refrigeration from inexpensive kerosene heat at a cost of only a few cents a day.

No Flame when owner's away appeals to remote homes

There is plenty of room for food. Enjoy ice cubes and desserts even on hottest days. There are absolutely no moving parts—nothing to get out of order, and you can depend upon its unfailing service for many years to come.

2 temperatures in 1 refrigerator
UPPER COMPARTMENT
SUB-FREEZING COLD
KEEPS MEAT, FROZEN FOODS, GAME, FISH, PIE DOUGH, ICE CREAM
MEAT FROZEN UNTIL YOU WANT IT
GAME AND FISH FROZEN FOR SAFE KEEPING
BUY FROZEN FOOD SPECIALS • KEEP SAFE UNTIL WANTED
FROZEN FOODS
LOWER COMPARTMENT
MOIST COLD
KEEPS FOODS FROM DRYING OUT, KEEPS THEM FULL FLAVORED, FRESH AND NUTRITIOUS
HIGH HUMIDITY KEEPS VEGETABLES FRESH AND PRIME
KEEPS COOKED FOODS
LEFTOVERS
MOIST AND PALATABLE
AT PEAK OF FLAVOR

ever before. Leafy vegetables are preserved without wilting or shrinkage in the drawer-type super-moist crisper.

Cooked foods are held at their appetizing peak for an incredibly long time. The moist cold is the secret. The air in the humid cold chamber circulates constantly over the WET coils, providing the kind of air conditioning food preservation must have to produce maximum results.

This high humidity is accomplished by the use of a special radiator-like chilling unit which does not frost like the conventional type evaporator.

This new development accomplished without adding one moving part

This outstanding advancement has been accomplished without adding one single moving part to the Shelvador refrigerator. These new refrigerators are efficiently and carefully manufactured in the new Crosley factory—probably the finest plant of its kind in the world. A background of long experience, unsurpassable engineering talent and skilled craftsmanship produce quality in every part that goes to make each guaranteed Crosley refrigerator.

FREEZORCOLD FEATURE

ONLY $15

...TO $20.00 MORE THAN COMPARABLE REGULAR AND DELUXE SHELVADORS

This new FREEZORCOLD PLUS the SHELVADOR is refrigeration's greatest sales possibility today

You may think the Shelvador an old story—but if you stand in the Crosley exhibit at the New York World's Fair and see the thousands of women examine, study and enthuse over the Shelvador which to them is *new*, your enthusiasm will be revitalized and you will realize that the Shelvador still has a great and fertile market.

FREEZORCOLD SHELVADORS
4 MODELS

6 ft. Regular	7½ ft. Regular
6 ft. Deluxe	7½ ft. Deluxe

THE CROSLEY CORPORATION

POWEL CROSLEY, Jr., *President* Home of WLW—"*the Nation's Station*"—70 on your dial CINCINNATI

See the Crosley Building at the New York World's Fair

Specialty Selling Ideas

Organized Personal Contact System Nets Sales Even While Manager Vacations

By Robert Price

SAN ANTONIO, Tex.—How would you like to take a month's vacation every year, and still have $2,000 in appliance sales to your credit while you're taking it easy? That is the unusual record of Fred Brinkley, appliance sales manager of San Antonio Music Co., Stewart-Warner dealer here.

Through a series of subtle reminders, Mr. Brinkley kept in constant touch with his prospects, so that when they thought of refrigerators, they thought of him. So well did he sell himself that every one of his "appliance friends" insisted on giving him credit for the sale, whether or not he took the actual order.

Naturally, this "absentee salesman" has a definite plan of attack, and his method centers around his own prospect file, which he makes up from the store's paid-up accounts and his own list, collected through users and friends.

Each week he goes through the store's paid-up accounts, and selects the names he intends to use. This selection is made from customers who are known to have old refrigerators, or no refrigerator. If the customers are known to have major appliances of fairly recent purchase, they are marked as possibilities for small appliances.

Each of these accounts receives a personal letter from Mr. Brinkley. He uses no set form for these letters, but endeavors to make the text of the letter read as though it was a purely friendly gesture. He thanks the customer for the past business, and expresses his desire to serve them in the near future when they need anything in his line. He then assures them that their credit is good for any household needs. The letter is closed with the statement that it would be a privilege to serve the customer personally.

The letters are never stenciled, for Mr. Brinkley believes that the average person is quick to recognize "those cut and dried affairs," quicker to appreciate an individual letter.

Another point in his personal contact system is frequent use of the telephone. He cautions, however, that many salesmen have won friends—for other dealers—and alienated good customers, by this same method.

The secret of telephone contacting, he believes, is to make the prospect feel as though it is a personal favor to keep them in touch with any special items that the store has to offer, or to inquire as to the possibility of an item that the woman has discussed previously.

These friendly calls have resulted in three out of five persons coming into the store, and here they are given the same special attention. If a sale does not result from the initial contact, full information on the prospect is carded for future use.

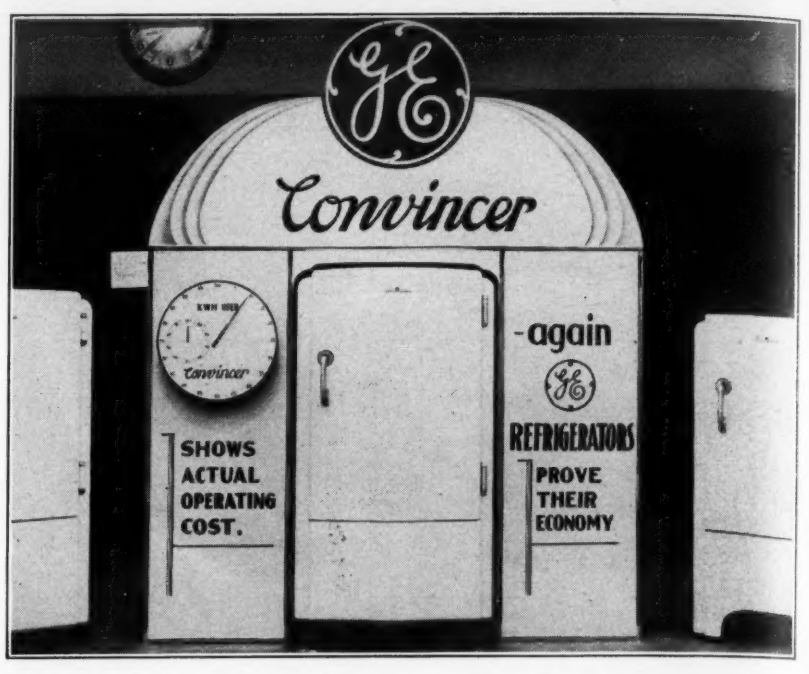
Every prospect that Mr. Brinkley collects is put on a personal plane, and kept there through a constant vigil of personal calls at the home, literature, or the telephone method.

"You don't have to be a nuisance, either," he says. "It's the way you see it, not how often. Many times I have contacted a woman just when she was in the market, and was rewarded by a quick sale. Had I waited, I would have lost a sale—and another 'appliance friend.'

"If a woman tells me that she believes she will be interested 'about the first of August,' I drop in on her a few weeks earlier to talk over her intended purchase. Very often she will buy then, while at the later date her interest might be cooled."

Mr. Brinkley does not neglect his outside calls on carded prospects either, but he has a system that saves him time and money. He files his prospects according to the section of the city in which they live. He then picks out a certain number in the same section, and works that section exclusively. This system, he says, has saved more than 50% on car expenses, and adds to the total amount he receives on his sales.

Refrigerator Prospects 'Read' Economy Story



One look at the economy-proving dial on the "Convincer" display used by the Des Moines Electric Co. gives prospects proof of current consumption. The recording kilowatt dial is attached to a sealed meter.

* * *

'Price Buyers' Convinced of Refrigerator's Low Operating Cost By Utility's Big Meter Dial

DES MOINES, Iowa—"If it's economy they want, hit them right in the eye with a dramatic proof display."

That is the refrigerator sales idea of the Des Moines Electric Co., General Electric utility dealer.

Through use of a large visual electric meter on the company's "Convincer" display, prospects are shown the actual operating costs of a refrigerator.

The purse appealing story is told through the use of a giant meter dial, attached to a sealed meter measuring the current consumption of the unit. Center of the display is the refrigerator itself, which is set in a chromium-trimmed frame, topped by a decorated arch with the provocative word "Convincer" inscribed in large letters.

Holding a prominent place on the large sales floor of the utility, the display catches a great many people on its novelty alone. Salesmen are stationed near the refrigerator to explain the economy test.

Little explanation is needed, however, for the clever setup tells the story in actual, indisputable figures. Large dial has a numbered face that records the kilowatt hours used, up to 100. Contained in the large dial is a small one, recording the total kilowatt hours used from the beginning of the test. A printed placard, suitably attested to, shows the day that the test was begun, the time, and the freezing position at which the motor is running.

The many openings and closings of the door in demonstrations runs more than in average household use. Although this runs the current consumption up slightly, it adds to the effectiveness of the economy story, when this fact is brought home to the prospect.

According to J. S. Schilling, commercial manager of the utility, the increase in "price buyers" must be met with "a savings story that carries a punch." The unique display grew from that need, and was constructed from plans drawn up by the appliance sales manager.

Parents Buy More Appliances After Dealer Sponsors Theater Party For Children

WICHITA, Kan. — Entertaining children of the community at theater parties boosts electrical appliance sales, it is reported by the Thor Sales & Service Co., electrical appliance store. In conjunction with several other business firms of this city, the Thor Sales & Service Co. sponsors a theater party for youngsters of the city each Saturday afternoon.

In order to attend the shows, which are presented in a suburban theater, and to compete for the awards offered, the youngsters must be able to present sales tickets or newspaper coupons from the sponsoring firms. Each child pays a nickel plus the sales ticket for admission, and the sponsor pays the additional admission charge to the management.

A five-cent gift, candy or ice cream, is given to each youngster. The program includes community singing led by the master of ceremonies, a stage show, and a movie.

Every effort is made to make the children conscious of which firm is sponsoring the entertainment. A question and answer period is conducted by the master of ceremonies, and the youngsters respond in unison to questions regarding the sponsoring firm and its business. Children bearing signs for each of the sponsors parade across the stage, and each child makes a short speech for the sponsor whose advertising banner he carries.

THE majority of refrigeration installations are within the capacity of the No. 679—½ ton on Freon or 1 ton on methyl chloride. The No. 679 has been satisfying every requirement on these installations for over three years. There is no need for a larger or more expensive valve.

Like the larger Detroit Expansion Valves, the No. 679 is gas charged for maximum sensitivity and positive motor overload protection. It is an all metal valve for strength and endurance, and it provides consistent superheat over a wide pressure range. It may be used on both high and low pressure jobs without readjustment. Write for Bulletin 170.

• *Take advantage of your Jobbers' Cooperation* •

DETROIT LUBRICATOR COMPANY

General Offices: DETROIT, MICHIGAN

Canadian Representatives—RAILWAY AND ENGINEERING SPECIALTIES LIMITED, Montreal, Toronto, Winnipeg

MEET DOC ICE-X
He's a Specialist!

• This is DOC ICE-X, Ansul's new specialist in eliminating *ice* from expansion valves and capillary tubes. Doc gets there *quick!* And in machines charged with methyl chloride, methylene chloride, or any of the "Freon" refrigerants Doc provides *immediate* relief. Prevent any "ice illness" in your family . . . call on DOC ICE-X *now!*

• *ANSUL ICE-X dissolves ice and prevents ice formation. Non-corrosive, it contains no methyl or ethyl alcohol, no alkali, acid or other corrosives. It leaves no residue, does not react with refrigerants or oils. It may be used with acrolein methyl chloride.*

• Ansul ICE-X is machine-tested, easy to use, free of any hazard to life or health.

ANSUL CHEMICAL COMPANY
MARINETTE WISCONSIN CA-3-9

ANSUL ICE-X

THE ANSUL JOBBER NEAR YOU CAN SUPPLY YOU WITH ICE-X

Air Conditioning

Philco Kit Simplifies Window Installation Of Air Conditioner

PHILADELPHIA—To facilitate installation in practically every type of casement window of the model 60CW "Cool-Wave" air conditioner, Philco's parts and service division has developed a new and inexpensive accessory kit said to eliminate the necessity of building wooden ducts or, in the case of odd window sizes, of actually sawing the bottom of the metal window itself.

The kit consists of a complete window grille adaptor board ready for mounting against casement windows and for connection to the standard 60CW duct.

A service bulletin describing this kit and giving complete instructions for its use has been mailed to all Philco air-conditioning distributors.

A further aid in installation of the 60CW unit is a set of extension feet for raising the unit so that installations can be made on windows up to 34½ inches in height. Extension window ducts for use where the window-sill is wider than normal or where there is a radiator in front of the window also are available. These ducts are supplied in both 4-inch and 8-inch sizes.

Fair Exhibit Creates Florida Weather

NEW YORK WORLD'S FAIR—One of the most unusual air-conditioning ventures ever undertaken is the attempt made to duplicate actual Florida weather conditions in the Florida National Exhibit at the New York Fair. Not only will the air be held at the mean temperature and humidity found in Florida, but the fragrant odor of Florida orange blossoms will be added.

Two separate Westinghouse air-conditioning systems will be employed. One provides air conditioning for the main exhibit hall, where beach scenes, orchards, and other Florida attractions are placed before the visitor.

A second system will care for the second floor offices, which include the Governor's room, private office of the manager, and a broadcasting studio. The two systems, using central ducts for distribution, have 85 tons capacity, and were installed by Buensod-Stacey Air Conditioning, Inc.

Control of air temperature, with particular emphasis on the control of humidity, makes possible the manufacture of cigarettes in the American Tobacco Co. exhibit. Atmospheric conditions of the company's southern factories are duplicated in the exhibit.

One hundred and eighty-five tons of Westinghouse air-conditioning equipment is used to cool the Electric Utilities exhibit, which contrasts a utility office of 1892 with a present-day utility business office.

The Westinghouse exhibit, featuring the Microvivarium Room, where life and death of micro-organisms are projected on huge screens, has its own air-conditioning system. The auditorium and club rooms are cooled by two 60-ton compressors operating in parallel, while offices and the television studio will be cooled by self-contained units.

The British, Roumanian, and Czechoslovakian exhibits are also air conditioned with Westinghouse units.

New Jersey Hospital Adds Air-Conditioning System

WOODBURY, N. J.—Underwood Hospital has been added to the growing list of institutions using air conditioning to provide comfort for patients and physicians.

York equipment is being installed to serve the two operating rooms, and delivery rooms of the hospital's maternity department.

Structural changes will be made in the windows of private rooms to accommodate portable summer conditioning unit for patients when specified by their physicians.

Correct Zoning Called Mark of Quality

PHILADELPHIA — Correct zoning of air-conditioning systems to provide utmost flexibility in operation was described by Walter A. Grant, district chief engineer for Carrier, in an address before the Philadelphia chapter of A.S.H. & V.E., as "one of those intangibles in design which distinguish the quality system from the mediocre."

He explained that zoning divides an air-conditioning system into sections, to provide the desired air conditions to meet the varying requirements.

"Since zoning may well be the controlling factor in ultimate buyer satisfaction, engineers are today realizing more and more that good zoning is becoming an essential factor in insuring the success of modern air-conditioning projects," he said.

"The ultimate test of the economic worth of air conditioning is measured by the physical comfort of the occupants. Since individual preferences vary rather widely, the successful air-conditioning system must be conceived to satisfy the greatest possible percentage of people."

Cooling System Helps Turn 'Roof Garden' Into Supper Club

MEMPHIS, Tenn.—Air conditioning has made possible the transformation of Hotel Peabody's "open-air" roof garden into a glassed-in supper club, which is now known as the "Skyway."

Steel truss construction was used in remodeling the Skyway, making a circular dance floor 70 feet in diameter without obstruction.

A suspended ceiling, 9 feet above the floor, has a dark blue finish to simulate the sky, and lights which are built in the ceiling give the illusion of stars.

Air is introduced to the room through three Anemostats, each handling 5,000 c.f.m. Frigidaire conditioning equipment located in a nearby penthouse supplies 55 tons of refrigeration.

Return air is taken from the room at points under the windows around the outer edge. Excess air is exhausted through space provided in the lighting coves.

The attic above the ceiling serves as a plenum for the operation of a 6,500 c.f.m. American Blower exhust fan.

When the Skyway was opened on Jan. 26 of this year it was necessary to operate the cooling system to maintain comfort conditions in the room, which has a seating capacity of 750 people.

Waldorf's Guest Rooms To Be Conditioned

NEW YORK CITY—Several hundred guest rooms in the Waldorf-Astoria hotel are now in process of being equipped with summer air conditioning. Frigidaire equipment is being used.

In addition to the guest rooms involved, approximately 350 tons of refrigeration will be installed to supply the cooling for several of the hotel's smaller ballrooms, private dining rooms, as well as a group of miscellaneous offices.

In the case of the guest rooms, conditioned air will be supplied to the room by means of a suspended air-conditioning unit located next to the ceiling of the room foyer, between the bathroom and clothes closet. A small grille outlet admits the cool air to the room proper.

A sub-ceiling under the unit completely conceals it, and restores the original appearance and decoration. Other than the small circulating fan built as an integral part of the suspended air-conditioning unit, no mechanism will be located in the guest room, as all other equipment that is used is located below the ground level.

Cold water is the refrigerating medium, and is circulated to the suspended room units through a system of risers installed in a corner section of the clothes closets located only a few inches from the unit locations. In a few cases, the ceiling of the closet itself is used as an installation point for the conditioning unit, with a grille opening into the room from that point.

Although the units used have been designed for quiet operation even at full capacity, a two-speed switch located at a convenient point on the wall provides a low speed that is said to be especially suited to all-night operation.

A thermostat, which is mounted on the wall with the two-speed switch, keeps the room temperature at whatever point is most desirable to the guest, and can be changed by him at will.

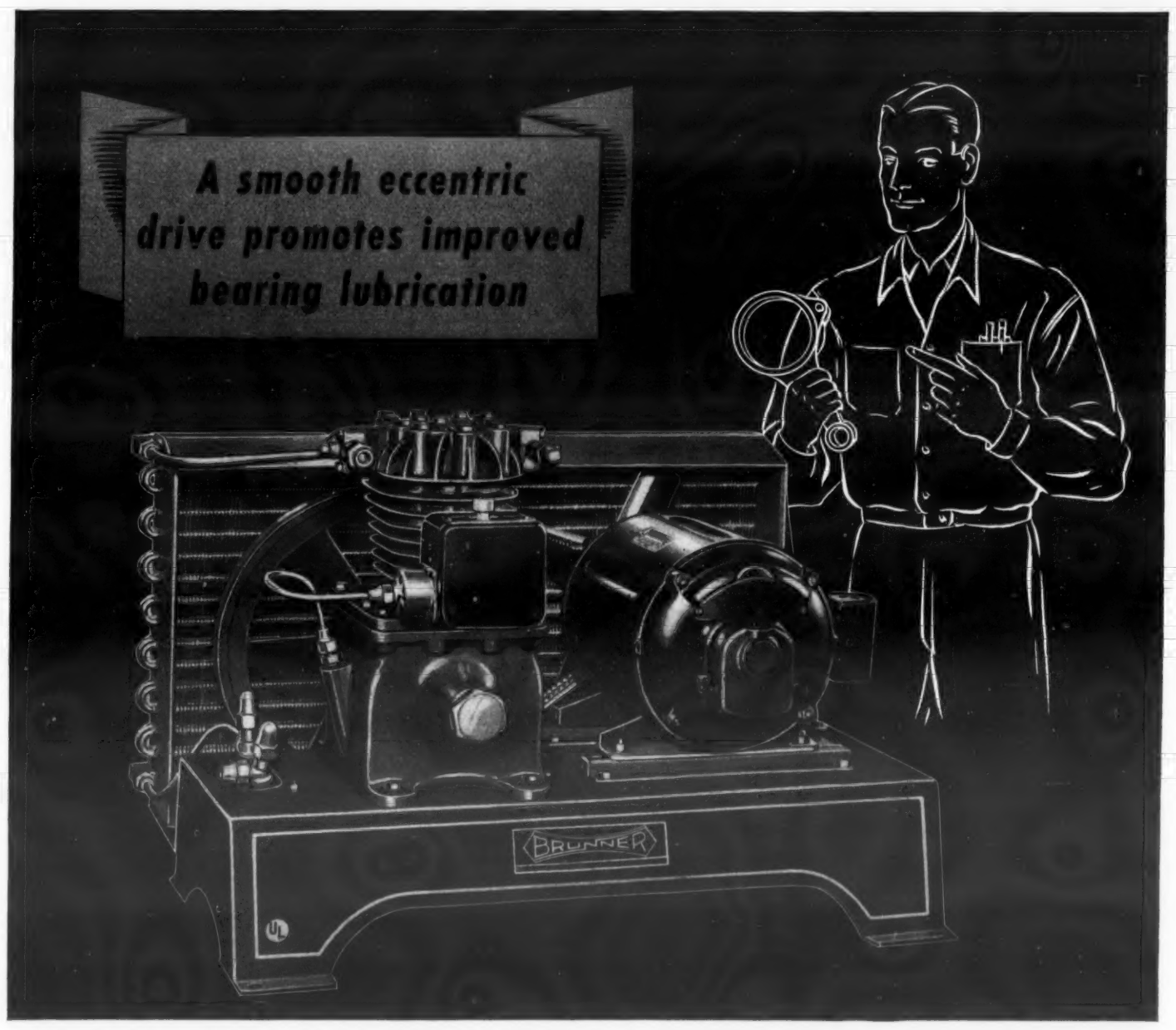
Conditioning Aids Dairy In Sanitation Problem

DENVER — Prevention of ceiling steam condensation, a recognized sanitation hazard in the dairy industry, has been accomplished by the installation of air-conditioning equipment in the City Park Co. here.

The year-around air-conditioning system serving the plant is equipped with heating and cooling coils; the latter of a type which permit the use of either cold water or brine as a refrigerant.

Water at 52° temperature is available from the well on the property, and brine may be obtained from the regular commercial refrigeration system used in the plant.

Forced convection cooling, supplied by the same plant, is used to cool the company's milk refrigerator.



Every Brunner Unit is tested for Underwriters' Laboratories Approval and Carries the U. L. Seal

Silence—that perhaps is the most noticeable feature of the Brunner eccentric drive. For here is a design which takes the noise out of commercial refrigeration, reduces it to a gentle purr. But along with this smoothness of operation comes another important advantage, ***improved lubrication***. The eccentric drive efficiently moves the lubricating oil to the bearings, because the straps are always submerged in crankcase oil. There is no excessive agitation of the oil, and the oil does not leave the case. Naturally, there is less oil traveling around the system—it's in the crankcase where it belongs... Why not take advantage of design superiorities like these—superiorities which extend throughout the Brunner construction and spell long-term dependability? A technically trained factory representative will explain the Brunner equipment best suited to your requirements. Refrigerating and air conditioning units, air and water cooled, from ¼ to 15 H.P. Brunner Manufacturing Co., Utica, N.Y., U.S.A.

The Symbol of BRUNNER Dependability

Oversupply of Dealers Seen as Cause of 'Discount' Price Situation In Southwest

• • •

Old-Line Dealers Offer Various Remedies For Appliance Retailing Problems

(*Continued from Page 1, Column 5*)
manufacturer's insistence, sought volume through more dealer outlets. With dealer underselling dealer and prices and profits reduced, the mortality of dealers and distributors was said to be high.

As concerns the general situation of business, Mr. Hoheisel expressed the opinion that the unrest was due to the threat of war in Europe and the tightening of buying power here due to the individual's fear that "his job is not secure so he doesn't feel that he can go out and buy refrigerators or anything else." Mr. Hoheisel further believe that in trying to help the "little fellow" the government has really hindered him, for he maintains that the manufacturer has taken a stand to fight both the government and the business-man retailer.

Attempts To Hold Prices, Unit Volume Drops 20%

An example of the position of the dealer mirroring this situation is the Oklahoma Electric Supply Co., Kelvinator dealer. The manager revealed that an attempt at control of refrigerator sales was made through a dealer organization but as soon as one violation was made the whole agreement fell apart and since that time "anything goes." Trying to hold his deals close to the fair profit line has caused this dealer's sales to drop 20% from last year, according to the report.

Hotpoint Dealer Claims Distributor Competes

Another firm, Cardwell Electric Co., Hotpoint dealer, has tried to meet the competition of other dealers, yet sales are down for the winter months over the same period in 1938. Going as low as 10% markup for a cash sale before a prospect is allowed to leave the store is the reported practice.

"Why we even get competition from our distributor," he reported. He then cited the case of giving a sales talk to a prospect, getting the prospect pretty well sold, and the distributor stepping in and taking the sale by offering a price below the dealer's best quotation.

Some success has been found in the equipping of all-unit kitchens, it was reported. Given splendid cooperation by the utility, it is believed that a very good item can be made out of the sale of the kitchens. The store is equipped for giving a complete planning service and "if the distributor doesn't step in and cut under us" it was thought that due to the large number of new homes being erected in the city that many sales would materialize.

Thinks Trained Salesmen Would Beat Price-Cutting

Although experiencing some poor months at the first of the year, unit sales at Pettie's, department store dealer handling Frigidaire, are up over 1938 figures so far this year. The manager, Mr. Haverfield, said that he had given up trying to combat the deplorable condition existing between dealers and the open selling of units at wholesale prices.

"Rather," he said, "I believe that a great deal of the trouble comes from poor salesmen and so I am going to concentrate on building a sales force that will give me a real job. If they are topnotch salesmen, I still think they can beat any set of conditions. Too often they leave a prospect with the feeling that 'this is not the best I can do on the price' where if they forgot price and sold their merchandise, we could really sell a great many more refrigerators."

Mr. Haverfield has had the experience of a long succession of poor salesmen and he stated that the training done by distributors and manufacturers was not adequate even when supplemented by dealer training. He advocated a regularly constituted school for salesmen—for he considers that selling refrigerators, or any specialty item, is a profession that calls for careful selection and training of men.

He also said that the manager of an appliance department must show a profit in his department. To do this he must have a carefully organized force working under direction.

"Especially in a town like this is that important," he went on, "but I believe that the situation of price being put before the selling of merchandise is pretty general. Aside from the existing conditions of price cutting and attendant evils, poor salesmen are the real dealer problem today."

Department Store Adds 'Price Line' In Defense

By putting in a price line to compete with the chain stores on refrigerator sales, John A. Brown Co., department store dealer, reports that sales are on the increase. The manager here said that he took on the Gibson line to compete for the low-price buyer, whom, he thinks, buys early in the season. Also to catch the early buyer, the store offered 1938 and 1937 merchandise in January and counted many sales on this move. It is expected that the April business of last year will be doubled in 1939.

Dallas, Texas

After an unusually large volume of appliance business in February this year, sales took a sudden dip in Dallas during the first half of March. This decrease was attributed to rather unsettled conditions locally and the increasing effect of the national and international political and economic tangle.

As the warmer weather later in the month began to increase the prospect interest in refrigeration, earlier losses were somewhat recouped and total sales for the first quarter this year were said to be slightly over those of last year.

Building of many new homes, an average of 75 a week, provides an excellent market for refrigerator and complete kitchen sales. Also, there are many new families migrating into the southwest, in and around Dallas. Out of the 75,000 wired homes in the city, 45,000 were reported to already have electric refrigerators in use. This year's market was expected to be found among new families and in replacement installations. A concentrated drive, sponsored by Dallas Power & Light Co., is being aimed at the remaining 30,000 non-users in the city.

As in many cities of the southwest, attic fans are beginning to increase in importance for many dealers. Electric roasters have been sold in big volume, last year the total sales reaching 1,048. Taking advantage of the national campaign on roaster sales, there has been fixed a quota of 2,000 this year. Electric range sales in the area are not large, because of low gas rates.

The sales field is left open to dealers, as the utility does not retail major appliances. Cooperation is offered by allowing dealers to display their merchandise on the floor of the utility. Campaign planning and general advertising help also is offered.

Considered an important aid to customer satisfaction in the use of appliances is the Dallas Adequate Wiring Committee, which draws up plans for efficient wiring and gives other special services to promote the better application of electric power to appliances.

Although refrigerator sales have made a comeback for many dealers in the city, the same old problems of chiseling dealers, "no money in refrigerators any more," lost money on trade-ins, lack of cooperation from the distributors in controlling dealer operations and limiting the number of dealers, greater discounts from manufacturer and distributor—problems that confront dealers in every area to a greater or lesser degree—were heard on all sides.

Another less familiar complaint, heard only in Tulsa and Oklahoma City before this, was the accusation that many prospects were taken from dealers by their ability to get "wholesale prices" from distributor outlets. Dallas, being a great buying center for a huge area, was said to be besieged by outlander buyers who came seeking "a cut price"—and getting it.

Dabbs May Import 'Northern' Salesmen

"Sales in refrigerators are down this year and will continue to go down," said H. B. Dabbs, appliance manager of Titche-Goettinger Co., Frigidaire department store outlet. He based his opinion on the observation that the replacement business had not caught on as it was predicted to do this year.

"People with old refrigerators," he said, "seem satisfied as long as the refrigerator they have is running. It will be some years before replacements will pump new life into the market."

Mr. Dabbs believes that the electric refrigerator will soon be an over-the-counter item sold in the main by large department and furniture stores. He cited the fact that already this trend is increasing, as these department stores with large and varied accounts offer good terms on refrigerators to add customers to their store accounts.

In this merchandising move, Mr. Dabbs believes that the small dealer is through. He likens the progress of the refrigeration industry to that followed by the radio business. He described this as a rapid rise in sales for a certain period, with dealers and manufacturers on the sharp increase, and then a leveling out after a swift decline, forcing many dealers and manufacturers out of business.

Mr. Dabbs thinks that the decrease in the number of dealers would be an aid to those remaining, as this would do away with much of the wildcat selling carried on by the little fellows who disturbed the market by selling far below a profitable mark-up. Another problem, he finds, is the dearth of good salesmen in the area. He was thinking of importing salesmen from Northern cities to round out his own sales force. As all his salesmen work on a salary, he felt sure that the migrating salesman who could produce would be well repaid for coming to Dallas.

Staehle an Example of a Good 'Specialty Dealer'

"Get out of the high rent area and have a big store with all selling and service operations under one roof," is the advice of Mr. Staehle, manager of Electric, Household Appliances, Inc. General Electric household and commercial dealer, to the specialty appliance operator. He refuses to believe that the death knell of the independent specialty dealer has been sounded

(*Concluded on Page 7, Column 1*)

NEW UNIT INCREASES BEER SALES 50 TO 65%

New Col-Temp Dispenser Now Sells Bottled Beer or Ale by the Glass!

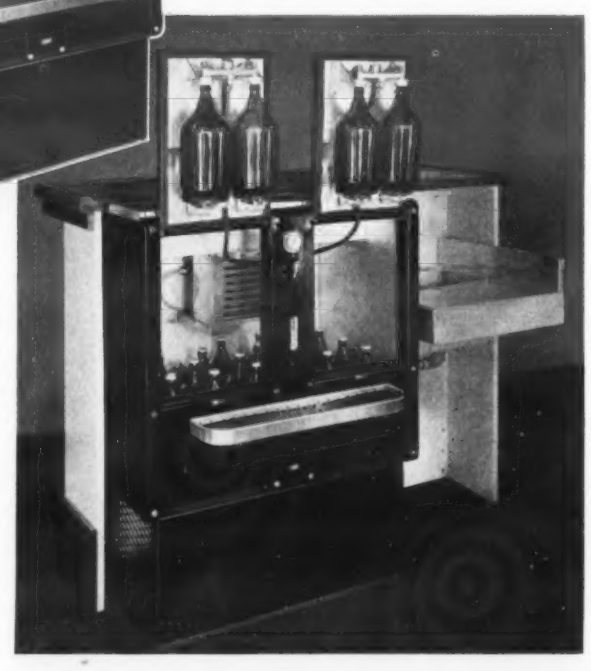
Dealers With Direct Selling Organizations:

Here's A Rich New Market For You!

WRITE or WIRE TODAY

for full information on dealer proposition

(Below) Col-Temp Dispenser Open. The self-locking doors when open, plus handy clamps, make it possible to change the bottles on one side in 20 seconds. Two sets of doors and faucets give continuous operation. Pre-Cooling capacity is 18 half-gallon bottles, plus 4 on the doors—ample even for the heaviest days.



(Above) Col-Temp Dispenser Closed. Sanitary Pharlite top will not burn or stain. A high-baked Dulux finish on the front of the cabinet makes it easy to clean. Removable stainless-steel drain is sanitary, and eliminates beer odors.

The greatest profit-maker the beer industry has ever seen! The Col-Temp Beer Dispenser retails a case of beer (½ gal. bottles) normally costing about $1.95 for $5.40, giving the tavern owner 275% profit. Tavern owners report beer sale increases from 50 to 65%! Serves BETTER beer because: (1) Bottled beer is pasteurized (2) Uniform carbonation is maintained at constant pressure, preventing both excess carbonation and flat beer (3) Temperature scientifically controlled 24 hours a day (4) Col-Temp Economy Faucets draw a perfect glass of beer EVERY TIME.

With Col-Temp Beer Dispenser, there are no coils to clean, no heavy barrels to handle. Saves time, handling costs.

No wonder Col-Temp Beer Dispensers sell wherever they are shown!

WHAT TAVERN OWNERS SAY:

"—I sold 46 cases of beer the first two weeks after I purchased my Col-Temp Dispenser with a gross net profit of $161.—"

"—I have noticed since installing my Dispenser that my customers usually buy two glasses of beer instead of one bottle with their meals.—"

—"I have been selling an 8-ounce glass for 5 cents. Since installing your equipment, my volume has gone up about 40%.—"

"—I'm convinced the public likes a fresh glass of beer for 10 cents, and this is the best method I have seen to give it to them.—"

COL-TEMP
Trade Mark Reg. U. S. Pat. Office
BEER DISPENSER
Manufactured by COLVIN-TEMPLETON, Inc.
871 Mission St., San Francisco, California

MAIL COUPON NOW!

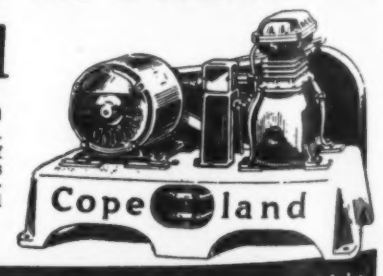
COLVIN-TEMPLETON, INC.
871 Mission St., San Francisco, Calif.
Gentlemen:
Please send me complete information on Dispenser and franchises available.
Name ..... Address .....
City ..... State .....

Build Both **PROFITS** *and* **PRESTIGE** *with* **Copeland**

Commercial Refrigeration

There's a double satisfaction in selling Copeland Commercial Refrigeration. First, of course, is the extra PROFIT offered by this quality-line. And second, there's the satisfaction of knowing that every Copeland you sell adds to your reputation and prestige.

Write today for FULL FACTS about Copeland's profit opportunity.



COPELAND REFRIGERATION CORPORATION, Sidney, Ohio

Dallas Dealers Expect More Sales This Year; Selling At Profit Is Problem

(*Concluded from Page 6, Column 5*)

by the large downtown department stores.

Employing a sales force of 22, all on a commission basis, the store carries on a widespread selling campaign that has as its working nucleus 10,000 General Electric users in the Dallas area. Keymen of this force are eight old-timers, who pace the rest of the salesmen. In addition, the store has at work two girls doing nothing but phone canvassing. Keeping on top of the prospect and ahead of the competition by constant canvassing is this dealer's formula for added sales.

Salesmen must be given an all-year line to keep them active and satisfied, in his opinion. All salesmen are allowed to sell commercial and household equipment, as well as attic fans and the full-line of electrical appliances offered for sale.

Profit is realized from used electric refrigerators through a four-man service department that reconditions the boxes for sale to low-income buyers. These boxes are prominently displayed on the floor. Service on user's boxes is rapid and has proved a good selling point.

Although Mr. Staehle just returned to the selling of household refrigerators in Dallas in August, 1938, he has made an outstanding record in other Texas cities in past years. In San Antonio he doubled his previous year's business in 1935, in 1936 sold 1,200 refrigerators, and in 1937 sold 800. For this year he expressed confidence that his volume would be "quite satisfactory."

The distributor came in for some condemnation in regard to picking real dealers instead of "some hole in the wall." He recommended that the distributor defranchise any dealer who insisted on conducting his business in such a way as to disrupt the entire market. "If necessary," said Mr. Staehle, "the good dealer, those doing a large volume of business, should be subsidized by the manufacturer to the extent of giving them longer discounts. This has been done, and successfully I think, in the radio business.

Lack of promotion of items such as all-electric kitchens and dishwashers was cited as being the big drawback to more sales in this field. Declaring that this is "an electrical age," Mr. Staehle believes that appliance sales will have their big volume in the future, providing the manufacturer, the distributor, and the power companies unite to sell the idea to the public. He said that the individual dealer had not enough margin to conduct this promotion alone.

Even 1938 Models Fail To Help Sanger's Sales

To meet the demand for a low-price refrigerator and to combat the price slashing of other dealers, Sanger Bros. Department Store, Norge dealer, has stocked 1938 boxes this year. Even with this counter-move, sales were reported to be off from last year.

Manager of the department, Mr. Gamble, stated that small dealers had a different setup than the large store and felt that their smaller overhead allowed them to gamble on discounts and trades. That this policy was ruinous, he said, was demonstrated by the number of small dealers who had gone out of business.

For all dealers, big and small, Mr. Gamble expressed the opinion that too little profit is offered, no matter how careful a dealer is concerning business operation. In this store, he continued, the manager must show a profit on all deals, and that this obviated any "shyster dealing."

Reconditioned trade-ins are sold by this store in a separate used furniture store operated by the store. This method of disposing of used boxes was said to be increasing among large department stores, as it allowed buyers of this class of merchandise a definite place to buy and increased the profitable market of this type of refrigerator.

Independent Dealer Still Has Chance—Law

"There are still plenty of people who would rather deal with the independent merchant than with the department or chain store," says Warren Law, Westinghouse dealer. "Despite the fact that the independent operator cannot compete on terms with the department stores in the standard brand refrigerators nor offer the low prices of the chain stores, I offset these advantages by offering longer trades, but I am careful to make my deals show a profit by resale and watching other expenses.

Sales for this store are running ahead of last year, volume running about three weeks ahead of last year's business. The replacement business, says Mr. Law, will keep the refrigerator business stable, for he believes that the saturation point will never reach a level that will seriously affect future sales. As to the growing importance of the low-income market, he said that the smart dealer will not plunge in without making sure of the ability of these customers to pay. The large number of repossessions due to depressions or working conditions were mostly among low-income groups, he believed, because they are on the "financial borderline."

Lack of 'Loyalty' on Salesmen's Part Decried

Lack of "loyalty" to their dealer on the part of salesmen is one of the major ills of the retail appliance business today, asserts a district manager in Dallas for one of the leading refrigerator manufacturers, who would not be quoted.

"By 'lack of loyalty' I mean the salesman no longer makes a real effort to sell the line which the dealer is representing, but will work with the customer to get him any make for which the customer may seem to share a strong preference—and for a split commission," says this district manager.

"I don't know how this can be remedied—except for dealers to get more conscious of this trend and to demand—and get—loyalty from their salesmen."

On sales promotional methods, the district manager is rather puzzled. About the only things that seem to bring tangible results, he said, are advertisements of "specials"—at a price.

Home Furniture Makes All Sales Show Profit

The effect of European conditions on the American business-man is undeniable, says Mr. Law.

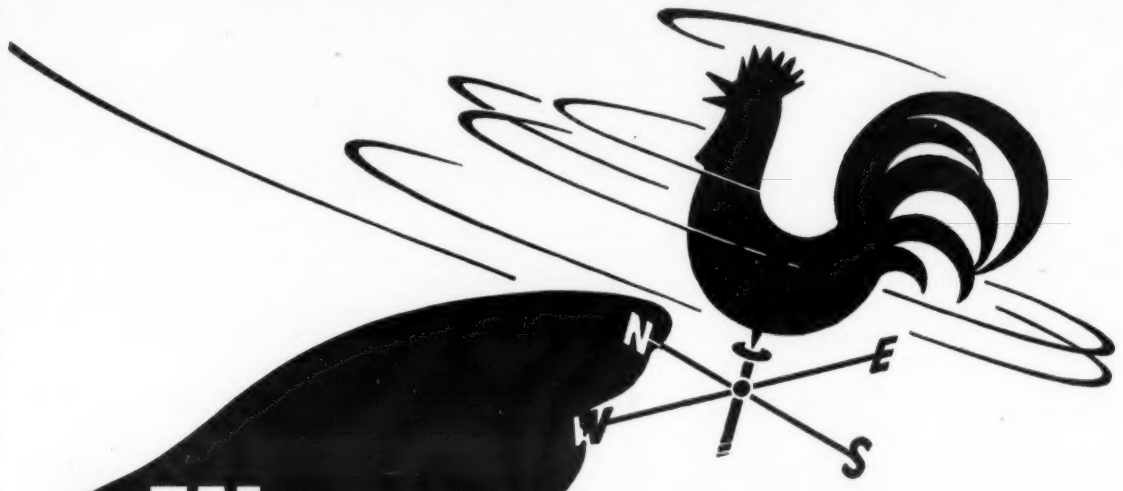
Claiming that they are not trying to "set the woods on fire" on refrigerator sales, Home Furniture Co., Crosley, Hotpoint, and Stewart-Warner dealer, is content to watch their accounts and make all sales count for profit. The store is somewhat off the business route, and much of the traffic for the appliance department comes from furniture customers drawn in by extensive advertising. Recognizing the appeal of low-price boxes, the store has a stock of cheaper refrigerators.

Anderson Predicting Sales Double 1938

"We will double our refrigerator business this year, because we have a better equipped sales force and we are going right out after sales," stated the manager of Anderson Furniture Co.'s appliance department.

Both furniture salesmen and appliance salesmen unite to push the sale of appliances in this store. If an outside refrigerator salesman "cards" a prospect, and the prospect is sold in the store by a furniture salesman, the outside man receives 7% of the commission and the inside "closer" gets 3%. These inside commissions are "pyramided," that is for three boxes sold a month a 3% commission is awarded, for four a 4% commission is given, and so on up to 7 boxes and 7%.

Special offers of merchandise and cooking demonstrations to bring forte of this dealer. To attract prospects for range sales, a special offer of aluminum wear and groceries was featured during April.



WE'RE CROWING about the new SEEGER series "25" air conditioned display case

Seeger's new Air Conditioned Display Case is an entirely new development in refrigeration.

Before announcing these cases to the trade, they were given a grueling test in actual operation in stores in five cities—and when we say test, we mean just that. The storekeepers were instructed to give them the "works", and in every instance, the results were amazing and beyond any reasonable expectation.

Series 25 Air Conditioned Cases come equipped with an air conditioning unit, which automatically circulates washed, humidified and refrigerated air to every corner of the case.

This air conditioning unit will maintain a relative humidity at approximately 90% at any room temperature. The losses from discoloration and dehydration are cut 50% and more.

Send for complete specification folder.

SEEGER REFRIGERATOR COMPANY
SAINT PAUL, MINNESOTA
NEW YORK BOSTON CHICAGO LOS ANGELES SAN FRANCISCO

April Room Cooler Sales Increase In Chicago

CHICAGO — Despite unseasonable weather, room cooler sales here in April increased more than two to one over that month last year, Commonwealth Edison statistics show. Sales last month were 46 units, compared with 21 in April, 1938.

Central-station type air-conditioning systems contracted for last month totaled 42, against 51 in the same month a year ago. Aggregate horsepower of this year's installations was 672.

Last month's central-plant installations were divided as follows:

Restaurants	13
General offices	9
Drug stores	5
Industrial plants	4
Theaters	3
Fur stores	2
Clothing store	1
Shoe store	1
Candy store	1
Private office	1
Hospital	1
Funeral home	1
Total	**42**

'Big Three' Sales Up In Virginia Area

ALEXANDRIA, Va.—Sales of the "big three"—refrigerators ranges, and water heaters—in Virginia Public Service Co. territory for the first four months of this year totaled 2,737 units, a shade higher than the 2,711 units sold in the same period of 1938.

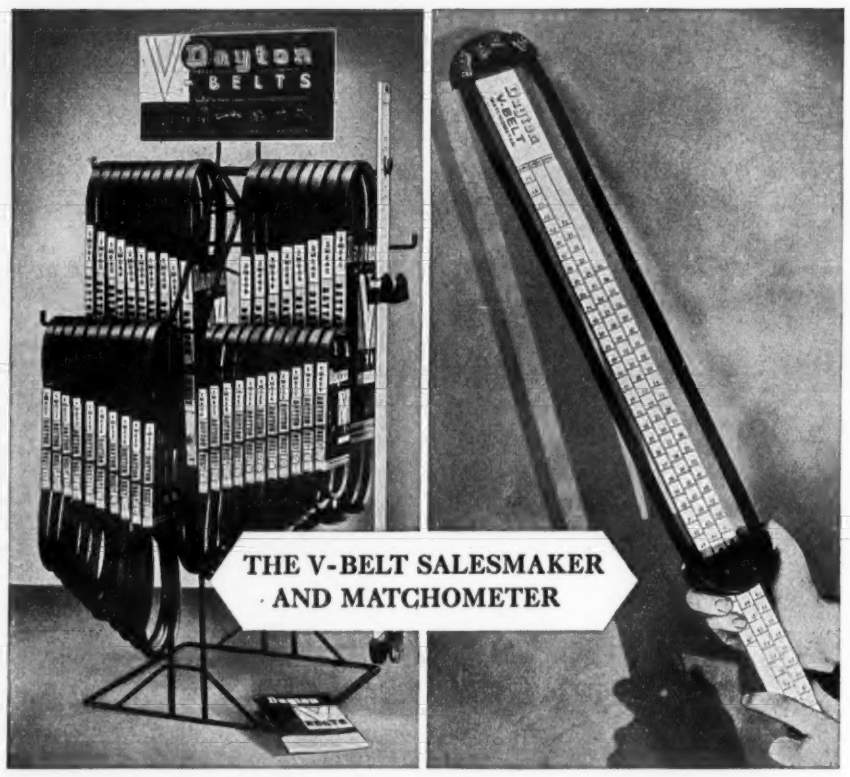
Refrigerator sales have been responsible for the increase, both ranges and water heaters being below comparable 1938 marks. Sales summary shows:

	1939	1938
Refrigerators	2,287	2,216
Ranges	307	333
Water heaters	143	162

Appliance sales in April helped a lot in advancing the total, amounting to 1,613 units valued at $226,047. Refrigerators led the list with 1,016 units, with washers second with 336, ranges third with 113, and water heaters fourth with 77. Commercial installations totaled 48.

Get *Extra Profits* with THE DAYTON V-BELT SALESMAKER - $19.89

Complete with 39 Assorted Most Popular Sized V-Belts



THE DAYTON V-BELT SALESMAKER— An attractive, visual and compact display rack assortment of 39 most popular sized V-Belts. Comes ready to use, with belts on the racks. Fits on your counter—beside your counter—or in your window. Every belt at your finger tips. On the back is a quick reference price list and extra hanger space for spare belts. Also included is a Reference Catalog listing all types of small machinery with corresponding Dayton V-Belt number and other data.

THE V-BELT MATCHOMETER—*FREE* during this introductory period! Listing regularly at $1.25—the V-Belt Sliding Pulley Matchometer takes the guess-work out of measuring belts to be replaced when the make and model of the machine cannot be identified. Quickly, simply and accurately this indispensable V-Belt Matchometer shows you the correct replacement V-Belt for any need. Read below how you can get it free.

V-BELT REPLACEMENT SALES MEAN EXTRA PROFITS FOR YOU

Spotlight your store as the neighborhood service headquarters for F.H.P. belt replacements. Give this profit-making extra service to hundreds of your neighborhood prospects—show them—and sell them the right V-Belt replacement for all makes of Electric Refrigerators, Washing Machines, Oil Burners, Coal Stokers, Water Pumps, Beer Pumps, Air Compressors, Wood Working Machinery, Small Garage Equipment and hundreds of other small machines.

The Dayton V-Belt Salesmaker is a light, rugged, compact and visual display which contains an assortment of 39 of the most popular sized V-Belts. It takes little space—on your counter, in your window or beside a counter—but it tells at a glance that you have V-Belt replacements for every need—and it costs you only $19.89 complete.

And, since the $19.89 price is the actual cost to you of the complete assortment of 39 belts alone, the Dayton V-Belt Salesmaker is yours *without extra cost.*

THE DAYTON RUBBER MFG. CO.
DAYTON, OHIO
World's Largest Manufacturers of V-Belts

ZIP THIS OUT TODAY

Free—If you act quickly—The Dayton V-Belt Sliding Pulley Matchometer.

V-Belt Sales Division,
Dayton Rubber Manufacturing Co.,
Dayton, Ohio.

Gentlemen:

I have checked my preference below:

☐ Rush me (freight prepaid) one complete unit of the Dayton V-Belt Salesmaker, for which I will remit $19.89. Include FREE* the V-Belt Sliding Pulley Matchometer which regularly lists at $1.25.

☐ Have your nearest jobber send a Salesman, explaining the *Free Matchometer Offer.

Name.....

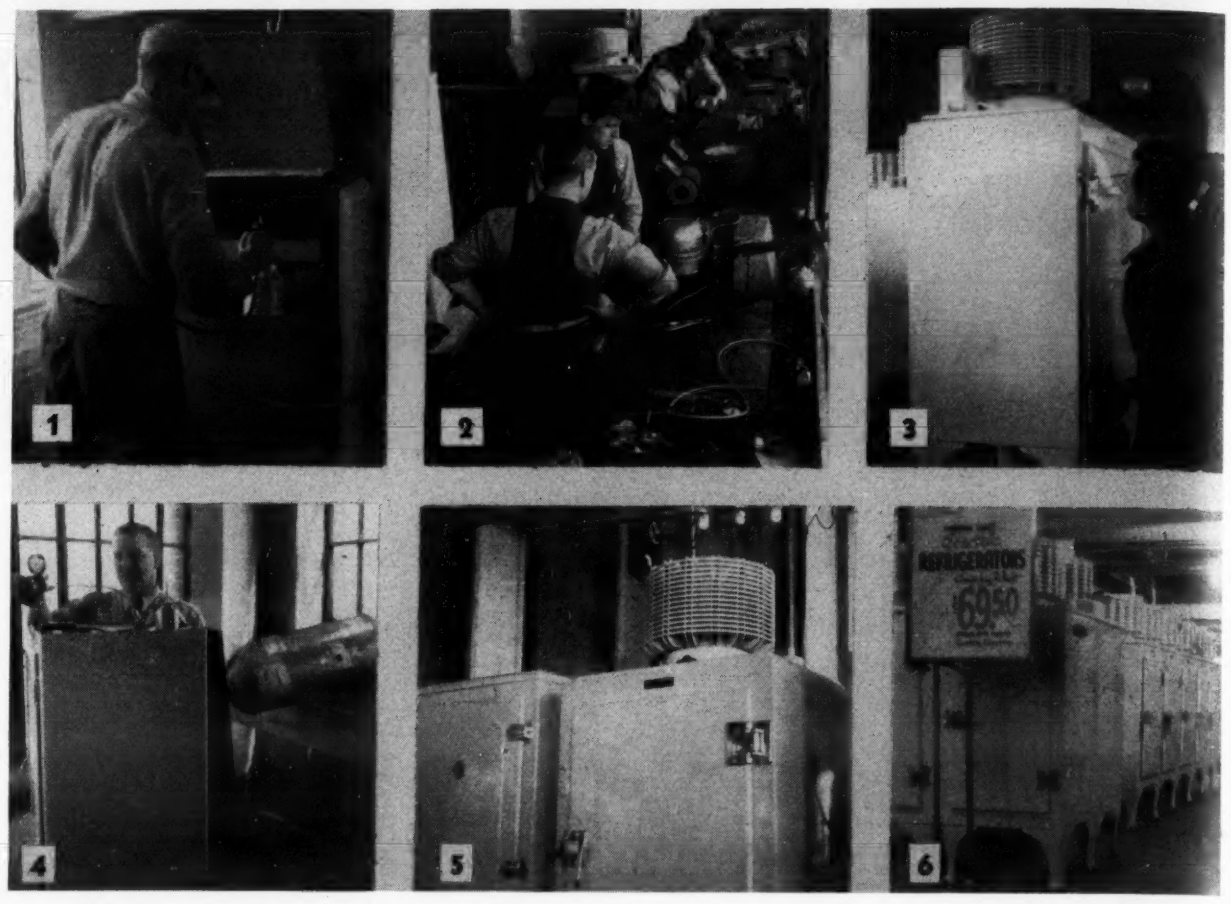
Address.....

City.....

State.....Date.....

*We reserve the right to withdraw this Free Matchometer offer at any time.

How Trade-Ins Are Handled In Philadelphia



Here's how they recondition trade-in mechanical refrigerators for re-sale in the Associated Refrigerator Plant in Philadelphia—and how the units are displayed when they "go to market." (1) Refinishing the refrigerator's exterior. (2) The repair bench, at which motors and compressors are overhauled. (3) Re-assembling the reconditioned unit. (4) Re-charging the system with refrigerant. (5) On the test line for a final check-up. (6) "Special Selling—Famous Make Electric Refrigerators, Completely Re-built, $69.50."

Philadelphia Pleased With 'Reconditioning' Plant Idea; Other Big City Dealers Ponder Trade-In Problem

Illinois Group Seeks Schedule of Appliances

(Concluded from Page 1, Column 3)

in schedule recommended by the association, and one of the principal reasons why trade-ins are still the source of one of the local appliance industry's biggest headaches.

Manufacturers as well as distributors are partially to blame for all the trade-in troubles, contends Mr. Strader, for in some instances the manufacturers have even gone so far as to encourage increasingly larger trade-in allowances.

The Illinois association, he declares, is now working on some very definite plans for the coordination of the various forces of the industry on the trade-in situation. While the association's code of fair practices and trade-in allowances has not been adhered to very strictly, Mr. Stader points out, a number of neighborhood dealers have operated under this system very effectively and have, as a result, been able to materially reduce the problem of trade-in allowances.

'Rental' of Trade-Ins Is Proposed In Milwaukee

(Concluded from Page 1, Column 3)

bothersome until saturation gets to around 50%, but local dealers' experiences indicate that a large replacement business is about to open up, and they want to get the problem in hand early enough to preserve a sound merchandising picture.

The Philadelphia reconditioning plant idea has been given considerable thought in local circles, but most dealers express doubt that Milwaukee is a large enough territory to handle an undertaking of this kind.

Another idea that is gaining favor is a "rental" arrangement on used models, to educate low-income families to the advantages of electric refrigeration. Back of this plan is the idea that, if these families could enjoy electric refrigeration for a few months on a rental basis, they would find some means of purchasing the unit.

A good used refrigerator would sell itself to such a family, whose next ambition would be either to own that model, or a new one. All such reconditioned models would be sold with an option to buy. Wisconsin Radio, Refrigeration & Appliance Association is now seeking dealer comments on solving the trade-in problem.

'Philadelphia Plan' On Trade-Ins Works

(Concluded from Page 1, Column 3)

arrangement has handled more than 600 units. Cost of the actual reconditioning work has been estimated at around $24, although dealers pay a flat $20 for the work.

Of all the used refrigerators received from dealers and utilities, 28% have been junked. Reconditioned units regularly have a 90-day guarantee after "start-up" in the customer's home, but some department stores have tacked on a year's service insurance for an extra $5.

Units purchased outright by the reconditioning plant have been resold to department stores and dealers at prices from $35 to $55, wholesale. So far, it is said, no mark-downs have had to be taken by the retailers to dispose of these units.

One department store bought 25 of the units, advertising a special sale at $69.50. Within an hour after the store opened, the store had to call upon the plant for more units, it is reported.

Birmingham Sales Gain 11% Over 1938

BIRMINGHAM, Ala.—Sales of electrical appliances by dealers and Birmingham Electric Co. were up 11% over comparable 1938 marks in the first quarter of the year. Dollar value of sales was $697,194, compared with $627,156 for the same period of last year.

Sales by dealers amounted to $666,236, approximately 96% of the total, with utility sales reaching $30,958.

Comparison of major appliance sales for the first quarter of this and last year follows:

	First Quarter 1939	First Quarter 1938
Refrigerators	1,358	1,242
Radios	4,113	2,492
Washers	694	605
Ironers	45	58
Water Heaters	13	20
Ranges	176	171
Stokers, Oil Burners	63	24

Sears Establishes 3 Agencies

BALTIMORE—Sears, Roebuck & Co. has established sales agencies for Coldspot electric refrigerators in Hagerstown, Frederick, and Cambridge, Md.

MODEL 45, above ↑
MODEL 30, right →
•
IDEAL FOR ANY SERVICE
•
Write for Catalog

SELF-CONTAINED REFRIGERATORS

• • • *"All-Purpose"* Models which provide the utmost in practical and systematic storage.

★ **ALL STEEL**—Styled to stay attractive. Choice of DuLux, Porcelain or **STAINLESS STEEL.**

★ **LARGE COMPRESSOR COMPARTMENT**—with sturdy steel cradle support for compressor.

★ **TRIPLE-GLASS PANELED DISPLAY DOORS**—if desired, in place of standard solid style. Full length doors also available—solid or glass display.

★ **SPECIAL INTERIOR** arrangements to suit the individual needs. Retinned wire shelves, adjustable to ½" variations. Meat hooks in place of shelves if desired, in display section.

★ **ICE CUBE MAKERS** in two sizes may be installed in upper right hand compartment.

GLOEKLER MANUFACTURING COMPANY
ERIE • PENNSYLVANIA
Sales Office: 431 Fourth Ave., Pittsburgh, Penna.

Commercial Field Surveys

Commercial Dealers Find 'Specialty Selling' Methods Pay In the New Orleans Market; Utility Helps In Search For Prospects

By Phil B. Redeker and Robert M. Price

New Orleans

Commercial refrigeration business has been quite good "way down yonder in New Orleans" for several years, and it looks like it might be even better this year. According to figures collected by the New Orleans Public Service Co., unit sales were up about 15% for the first quarter, and sales were said to be holding up well as April got underway.

Some observers credit the continually rising sales volume (in 1938 as well as other years) to the fact that modern mechanical refrigeration was slow to take hold in New Orleans, and thus a larger market remains. This may be true, but experienced observers would also note that New Orleans dealers in commercial refrigeration make a point of going out after the business, of using aggressive, up-to-date sales methods.

The New Orleans Public Service Co. has made a point of helping commercial refrigeration dealers as well as household dealers. Last year a cash prize contest was held for commercial salesmen on the basis of the number of ¼-hp. units of commercial refrigeration sold. This year another plan is being tried, which is designed to make the salesman's job easier and to bring him more business.

The utility will employ a group of men who will contact by personal canvass all possible prospective users of commercial refrigeration. These men will attempt to determine if the prospect is in the immediate market for refrigeration equipment, and if he is, they will show him the list of dealers. If he knows one of the dealers or shows a preference, his name will be sent to that particular dealer, otherwise the names of a few dealers will be selected and the prospect's name sent to them.

Colored Floor Plans Help Wand's Salesmen

Wayne Wands, dealer for Frigidaire machines and Tyler cases and coolers, is a veteran of the commercial unit business in New Orleans. He was with the Ebeling Co., distributor for the old Copeland Products, Inc., and played a major part in getting mechanical refrigeration into the famed public markets of New Orleans.

These markets, controlled by city officials, are an outgrowth of the necessity for very strict control in pre-refrigeration days. With the New Orleans climate hot and particularly humid, it was a vital necessity that the sale of meats to the public be regulated most carefully, and since it was easier to supervise one large operation than to check on a number of smaller ones scattered about the city, these huge market places came into being.

Although under the supervision of the city, which also equips the markets, the concessions or "stalls" in the big markets are privately operated.

Eight years ago when the city started to modernize the physical equipment of the markets the question arose as to whether ice or mechanical refrigeration would be used as the refrigerating medium. Mr. Wands "engineered" a test between ice and mechanical refrigeration as to food-keeping, cost, etc., which mechanical refrigeration won decisively.

Many public markets have been modernized since that date and Mr. Wands has sold probably the majority of them, first for Copeland, later for Frigidaire.

That Mr. Wands doesn't confine his activities to selling equipment for the public markets is evidenced by the fact that during the week ending April 14 he sold eight display cases, and four walk-in coolers to independent merchants.

Mr. Wands has a selling angle on markets that other dealers might adopt to their profit. It is simply that he has equipped himself to furnish both plans and equipment for a market layout for an owner who is either remodeling, or starting up a new venture.

In addition to his refrigeration equipment, Mr. Wands handles a complete line of shelving, display racks, vegetable display equipment, etc. (No vegetable moisteners or "sprays" are sold, however, the water being too warm unless refrigerated, does more harm than good.)

Floor plans showing various arrangements for various-sized stores are supplied Mr. Wands organization by Tyler Fixture Corp. The floor plans are nicely done in colors, so that when one of the Wands salesmen approaches a prospect who has a new or remodeled store in mind, he has something quite tangible to show him.

Just recently Mr. Wands has equipped the new Thomas market in New Orleans in just such a manner, even supplying beverage cooling equipment. Such jobs make quite a sizeable dollar volume of business.

Kelvinator Distributor Eyes Replacement Field

Oldtime name in the refrigeration distribution game is that of C. T. Patterson Co., Inc., Kelvinator distributor in New Orleans. And according to A. G. Riddick, company manager, the way things have started the current year will be one of the best in the company's history.

As in other large cities, a good share of the New Orleans commercial business is now in the replacement market, Mr. Riddick declares. And since an important part of the business obtained is going to be in the replacement field, Mr. Riddick thinks that the commercial refrigeration dealer and salesman should go about developing such business systematically—by getting up a list of users of equipment that should be obsolete, particularly of those using the make they are selling, rather than depending upon a hit-or-miss search for such prospects.

In the smaller communities, Mr. Riddick sees a service set-up of paramount importance. People in smaller towns are apt to put more faith in a reputation for service on the part of the local dealer or agent than they are in a nationally advertised name.

'Quality' Story Aids In Meeting Price Cutters

Somewhat unusual as a dealer organization is the Oak Appliance Co., which sells the Norge line of household refrigerators and major appliances, the Mills line of commercial refrigeration machines, and Viking commercial refrigerators.

Although it is located far out on the outskirts of the city, in the shopping district for a fashionable residential district, the store is said to do an outstanding job in both household and commercial refrigeration.

Sales through March were better than the same period in 1938, declared Harry M. Revell, sales manager of the commercial department, but had slowed down rather badly during the first part of April.

Mr. Revell believes that the "sales agent" type of distribution which some manufacturers of commercial refrigerator equipment have set up is forcing the regular type of dealer setup into a tough spot, and may take all the profit out of commercial refrigeration unless properly controlled.

"These men work out of a factory-operated showroom, they have no overhead, and they have a net price which they must get for a piece of equipment," Mr. Revell explained, "and anything over that is their commission on the sale.

"The legitimate operators, the ones that really want to make a living out of business, will try to get a fair price, sure, but there are too many men in the game willing to sell a job for $10 or $15 profit."

Mr. Revell feels that the industry as a whole will have to furnish the ultimate solution to this problem, but in the meantime he's meeting such competition by telling a quality-of-product story (a well-constructed product has considerable meaning in the kind of climatic conditions encountered in the New Orleans territory), and through a tie-up he has with a local manufacturer of cabinets, who builds equipment to order and thus gives Mr. Revell an advantage on certain jobs.

$10 Investment Grows Into Large Business

A success story which would be difficult to parallel is that which can be told of George W. Mims and his Frigid Refrigeration Service Co.

Mr. Mims started his own business not so many years ago with a $10 bill, and claims that was the last of his own money that he invested in the company, the rest of the money that has gone into the remarkable growth of the business having come out of profits.

Today Mr. Mims has a refrigeration business that is housed in a building that could be used for a manufacturing operation, he will employ anywhere from six to 12 men, he has two trucks, and he carries a stock of parts and supplies that is as complete as that handled by many jobbers.

He claims to have installed more than twenty tons of copper tubing in air-conditioning work, and has yet to repair a joint in any of this work.

He started out as a service and installation engineer, and that is still the big part of his business, but he is now also a dealer for Westinghouse commercial refrigeration equipment.

His is one of the first cases in which one of the "Nema group" of manufacturers has appointed a service firm to represent its line of commercial refrigeration equipment.

Mr. Mims frankly admits that so far he hasn't put forth much "selling effort" on the units—what stuff he has sold has been "bought" from him. He thinks, however, that he has established such a reputation for dependability that a considerable amount of equipment will continue to be "bought" from him. As long as he continues to move equipment without expending much time or effort, Mr. Mims will probably be satisfied. For example, he declares that he "sold" one job in 15 minutes, another in less than a half-hour.

'Sterilamp' Installed In Conditioned Train

KANSAS CITY, Mo.—First application of Westinghouse's bactericidal "Sterilamp" to railroad passenger cars has been made on the Burlington's new General Pershing Zephyr scheduled to commence service between here and St. Louis sometime this month.

Air flowing at the rate of 2,400 c.f.m. through an air-conditioned compartment will pass through the Sterilamp rays, which will reduce the bacterial content of the air approximately 85%, according to tests conducted by Dr. Harvey C. Rentschler, Westinghouse engineer who was instrumental in developing the lamp, at the plant of the Edward G. Budd Mfg. Co., Philadelphia, where the train was built.

As in most air-conditioning systems, the proportion of fresh and recirculated air can be varied considerably, but all air entering the passenger compartments of the Zephyr, regardless of origin, must first pass through the germ-killing rays.

Among microscopic organisms destroyed by the Sterilamp are those which cause nasal catarrh, epidemic sore throat, and pneumonia.

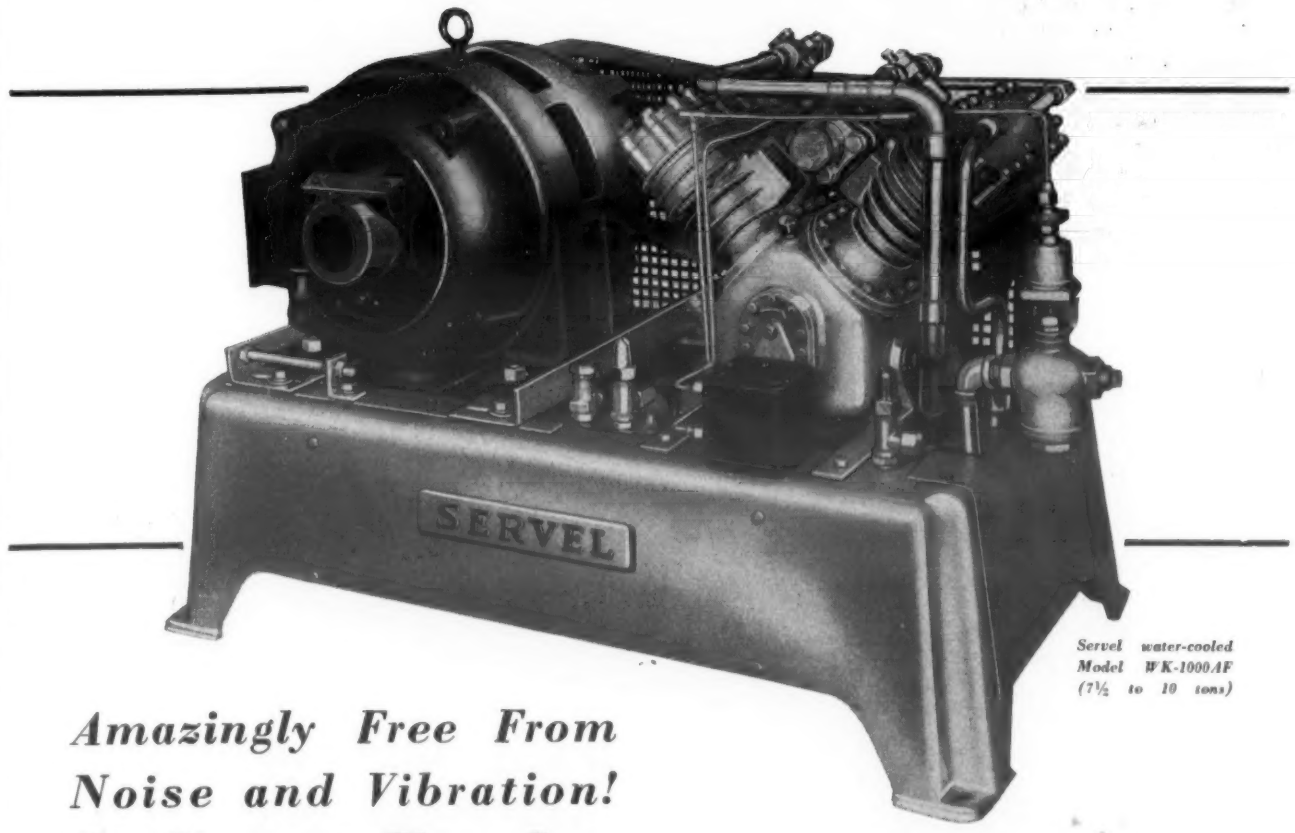
McCall Opens Office In Merchandise Mart

CHICAGO — McCall Refrigerator Corp., Hudson, N. Y. manufacturer of commercial equipment, has opened a midwestern sales office and dealer display in the Merchandise Mart, with Raymond Roy in charge.

Filtrine

Water Coolers — Filters
Cafeteria — Industrial
Commercial Remote
Surge Tanks Pipe Coils
Filtrine Mfg. Co., Brooklyn, N.Y.

NOW! Servel Announces a Series of Refrigerating Units With 8 CYLINDERS!



Servel water-cooled Model WK-1000AF (7½ to 10 tons)

Amazingly Free From Noise and Vibration! So Compact They Save 50% in Floor Space!

What a difference those extra cylinders make! In quietness! In compactness!

These sensational new Servel units develop full capacity and efficiency. Yet the balanced multiple-cylinder principle brings the level of noise and vibration down almost to the vanishing point.

Servel engineers perfected these 8-cylinder models after years of careful testing in the field. They proved conclusively that the additional cylinders insure *smoother operation—longer life for wearing parts—and a steadier flow of compression.*

Thorough modernization and careful design have made it possible to set new standards of compactness. Without any sacrifice of efficiency or performance, the full 10-ton model requires *less than 8 square feet of floor space!*

Find out how these sensational 8-cylinder units fit into your selling plans for this summer. Write today for full details!

SERVEL, INC.
Electric Refrigeration and Air Conditioning Division
EVANSVILLE, INDIANA

AIR CONDITIONING & REFRIGERATION NEWS

Trade Mark registered U. S. Patent Office; Established 1926 and registered as Electric Refrigeration News

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Air Conditioning Comes Back Home

SOMETHING BIG is happening in air conditioning. News of the last few weeks indicates that there is now a marked trend toward allying the distribution of air conditioning with the distribution of commercial refrigeration.

Note these moves:

General Electric has combined its commercial refrigeration and air-conditioning departments—formerly directed from separate cities—in one department at Bloomfield, N. J., under the direction of Stuart M. Crocker.

Frigidaire has combined its air conditioning and commercial refrigeration departments at Dayton under Herman Lehman. Heating equipment sales go back to Delco at Rochester, N. Y. Mr. Lehman was formerly manager of commercial refrigeration sales, and was especially successful with his commercial refrigeration work as manager of the St. Louis branch.

York has combined its commercial air conditioning and refrigeration divisions under the sales management of Walter Landmesser. Mr. Landmesser, formerly commercial sales manager for General Electric and Norge, has been a specialist in commercial refrigeration for years and years.

Kelvinator Set-Up Proves Model For Rest of Industry

Kelvinator, which never did get off the track, will continue its commercial refrigeration and air-conditioning set-up under the managership of J. A. Harlan.

There has also been a change in the sales direction at Carrier, and reports indicate that increased attention will be paid to distributorships which handle both commercial air conditioning and refrigeration.

Thus air conditioning for human comfort, which originally was part of the commercial refrigeration picture, is returning to the men who understand it and can sell it.

For the last few years, a different theory has prevailed. It was thought that commercial air conditioning (as distinguished from the large industrial applications) could be sold by the plumbing and heating trade. This was a theory which was sold to the industry by the plumbing and heating people, who saw their enormous investments in plant and marketing facilities threatened by a lusty infant industry. Their idea was to get this business under control before it ruined them.

While this theory of distribution was in the ascendancy, practically everybody in the business lost money—and sales were disappointing.

How Manufacturers Can Save On Costs By This Move

By placing air-conditioning sales back in the hands of commercial refrigeration departments and distributors, manufacturers can save considerably on sales costs and overhead. One field force can handle both lines. It is also declared that promotion can be directed much more effectively.

Another saving can be effected in training costs. Trying to teach refrigeration to the heating trade turned out to be an expensive business. And poor installations proved costly to goodwill.

Commercial Refrigeration Men Have Made Money

Perhaps most important, from the standpoint of both manufacturer and distributor, is that commercial refrigeration distributors are making money. They comprise the one element of the business that has consistently made money over a period of years.

They are not likely to go out of business, or give up air conditioning, after a few months of sporadic trial.

Air-Conditioning Distributor Turnover Flagrantly High

Anyone acquainted with the problems of air-conditioning distribution knows that the turn-over among distributors has been terrific. It has been one of the major worries of the business. The new trend toward the use of the highly successful commercial refrigeration organizations, it is hoped, will reduce considerably this big item of expense.

It is also predicted by those responsible for this new trend that sales—especially of "packaged" lines—should rise to new heights after the change-over in distribution has had a chance to become effective. Commercial refrigeration distributors are sales-minded, in contrast to the contractor's approach to the problem which has been prevalent.

As one sales manager analyzes the difference: "It's selling, instead of bidding."

Future Looks Bright Despite Present Chaotic Conditions

That these changes in distribution and sales management will solve all the problems of the chaotic air-conditioning business in a hurry is too much, of course, to expect—just as it would be too much to expect a new Administration down in Washington to put the country back on its feet in short order. In both situations, such a mess has been created that no new management can clean it up without a lot of work and study.

However, the outlook for the future certainly does seem more reassuring. The industry's *selling* activities are back in good hands.

They'll Do It Every Time . . . By Jimmie Hatlo

SALES DEPT
BOSS, I'D LIKE TO SAY THAT I THINK WE ALL OUGHT TO GET TOGETHER AND CUT OUT THIS CHISELING IN ON EACH OTHER'S CUSTOMERS! THERE'S TOO MUCH CUTTING IN ON DEALS AROUND HERE!
AS USUAL - ARTHUR'S POINT IS VERY WELL TAKEN. LET'S TRY TO WORK MORE LIKE GENTLEMEN AROUND HERE AND LESS LIKE CUT-THROATS.
NEXT DAY IN THE SHOWROOM - THEY'LL DO IT EVERY TIME —
BUT HOW ABOUT THAT NICE MR. SMITH WHO'S BEEN CALLING ON ME FOR THE LAST SIX MONTHS - TRYING TO SELL ME THE VACUUM CLEANER?
NOW, DON'T YOU WORRY ABOUT THAT. JUST SIGN THE CONTRACT ON THE DOTTED LINE AND I'LL SEE THAT MR. SMITH GETS FULL CREDIT FOR THE SALE.
SALES CONTRACT
5-17
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LETTERS

Chinese Manufacturer Envies Americans

"Rin-Tai" Refrigerator Mfg. Co.
204 Taku Road, Tientsin, China
Editor:

As manufacturers of electric refrigerators, and the only ones in China, we have pleasure to state that your magazine is certainly of great value, bearing all the news on the trade in question, and what makes us envious most is reading the amount of sales of electric refrigerators in the U.S.A., running into many, many thousands of any single make, whereas to our regret the natives in this town and its surroundings are not yet so refrigerator minded as to make us to increase our output even to a single thousand refrigerators per annum.

With the influx of Japanese residents to North China, our output has greatly benefited, for they do like and appreciate everything modern and up to date.

The undersigned, Harry Fuchs, is the sole proprietor of the firm, a Polish citizen, is 33 years in North China, conversing in eight languages. Our works at present occupies 16 foreigners and 142 native hands, manufacturing besides household and commercial refrigerators also portable air coolers and steel office furniture.

HARRY FUCHS

Business Paper Policy And National Events

Thermal Co., Inc.
St. Paul, Minn.
Publisher:

I have read with interest the large amount of space devoted on page 6 of the April 12 issue, to what appears to be a defense of the political editorial policy of the NEWS. For the life of me, I cannot see why the NEWS needs a political editorial column. I much prefer to read the daily newspapers for politics. I look to the NEWS for matters pertaining to the refrigeration industry. It seems to me that a trade paper does not need to aspire to a general editorial policy as all inclusive as the New York Times or Chicago Tribune. I feel sure that if the NEWS will enable to solve the problems which are exclusively the problems of the refrigeration industry, that they will warrant a niche in the Hall Of Fame. Politics can well be left to the established news agencies.

I think that Mr. Dessau has a very definite privilege as an advertiser in the NEWS, to complain of anything in the NEWS which would effect his business directly or indirectly. Your personal attack on Mr. Dessau seems to me to be without foundation. I regret that the NEWS has used its space to direct a personal attack on an industry member when its space could be used to so much better advantage.

H. W. SMALL

Answer: The original article in question was written by the editor after making a special trip to Washington to attend a conference between editors of the country's leading *business papers* and prominent government officials, including representatives of the Department of Commerce, the War Department, and the Navy Department.

It so happens that I attended the first of these conferences, which were inaugurated during the administration of Herbert Hoover as Secretary of Commerce. The program was developed as a result of Mr. Hoover's express desire to foster closer cooperation between government and business, especially in the promotion of foreign trade.

In later years this contact was not so fruitful but fairly recently definite efforts were made to revive the conference program.

With the advent of Mr. Hopkins as Secretary of Commerce and his announced intention to promote better relations between government and business, there was a great interest in this particular meeting.

At the meeting, high officials of the Army and Navy were present and discussed their problems most earnestly to the business paper editors. These officials were most serious in their desire to organize the country's industries in preparation for the eventualities which appeared to be most imminent at that time.

The report written by Mr. Taubeneck was authentic and highly enlightening. It represented first-hand information of great importance to this industry and to the country as a whole. Much of it has since been reported in other publications, but certain important facts were reported in the NEWS in advance of many national magazines and newspapers.

The question of British propaganda was discussed with the utmost frankness. In fact, representatives of the British government had no hesitancy in explaining their ultimate aims since many of the business paper editors were highly sympathetic with their objectives.

It is important to note in this connection that a large number of the leading business papers are edited in New York City, and it is quite evident that general sentiment in New York City is largely favorable to active participation in European affairs. General sentiment in the Middle West is noticeably different, and the British propagandists are well aware of their problem of converting the Middle West to their viewpoint.

Regardless of your own personal opinions on the subject, I believe you will agree that the public is entitled to the best possible information, and that we, as publishers, have the responsibility of keeping our own industry informed regarding events which might cause a complete disruption of the industry in very short order.

To me as a publisher, it does not seem reasonable that we should ignore any course of events which would (if not checked by an aroused public opinion) completely neutralize sales and manufacturing progress during the current year.

If you will think back to 1929 you may recall that many business papers (and certainly most magazines and newspapers) failed to warn their readers regarding the impending stock market crash and subsequent depression. Is it small wonder that the public, including business men, began looking elsewhere for information to guide them?

Now with reference to the publication of Mr. Dessau's letter and the editor's reply to it, you should take note of the fact that Mr. Dessau apparently undertook to organize a group of our advertisers. His *own letter* stated a hope which implied a boycott against the NEWS.

All the evidence points to the fact that he sent out letters to various customers of ours in which he stated, or intimated, that British buyers of refrigeration equipment were antagonized by the report of the Washington conference, and that the publication of this sort of information would interfere with the marketing of U. S. refrigeration equipment in the British Empire.

Now naturally our advertisers might be disturbed by such a condition, and it is not surprising that we received a few letters of protest. It is evident from the letters that these manufacturers were greatly impressed by Mr. Dessau's reports. Others did not take his efforts so seriously. We have made a definite effort to locate the source of these purported protests on the part of British buyers, but so far no one has furnished a single line to support the statements attributed to Mr. Dessau. On the contrary, British business men have informed us that the article would have no influence whatsoever on British buying. (See interview with Sir Owen Chalkley in April 19 issue and letter from B. Mittel in May 3 issue of the NEWS.)

We are beginning to have a rather broad suspicion that Mr. Dessau simply invented his story, and that his picture of a disturbed British market was largely imaginary.

If it is true that Mr. Dessau simply invented this tale and used it for the purpose of alarming our customers in an effort to cause them to withdraw their business and if he attempted in that manner to bring pressure to bear upon the editor, then I do not see how you can support Mr. Dessau in any such activity.

Publisher

Combination Display Cases For Quick-Frozen Foods

C. V. Hill & Co., Inc.
Refrigerators and Market Fixtures
Trenton, N. J.
Publisher:

After reading your news article of April 19 in the REFRIGERATION NEWS, subject "Quick Frozen Foods Aren't Displayed at Present," it is the writer's opinion that the answers to your questions "What's happened to the display case?" and "Why aren't display cases being used for frozen foods?" are either based on the fact that the gentleman who furnished the answers has only non-display type equipment to offer, or he lacks the knowledge of what is happening in the frosted food industry.

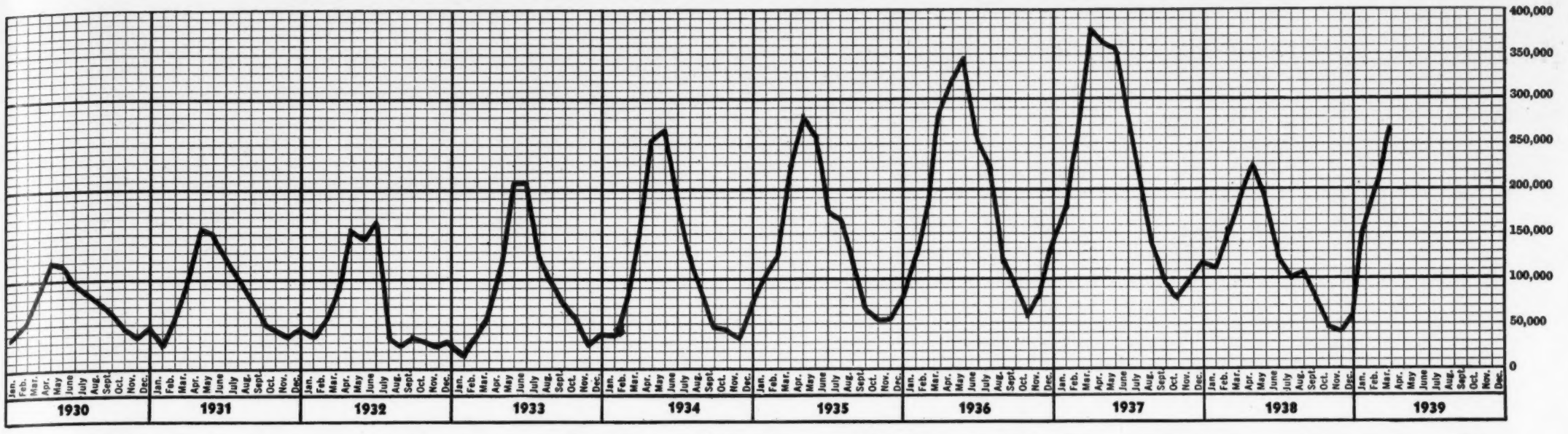
Successful merchandisers of foods and other products have proven and will continue to prove the value of display. It matters not what the product is, it cannot be sold in a profitable retail volume without display. Surely frosted foods are no exception.

This company has without a doubt contributed more to the frosted food industry than any other equipment manufacturers. It has designed and manufactured several types of equip-

(*Concluded on Page 11, Column 1*)

10-Year Record of Household Electric Refrigerator Sales

Monthly Fluctuations In World Sales By U. S. Manufacturers To Distributors and Dealers



1930		1931		1932		1933		1934		1935		1936		1937		1938		1939	
Jan.	34,000	Jan.	22,700	Jan.	39,400	Jan.	19,400	Jan.	38,000	Jan.	103,500	Jan.	125,400	Jan.	181,800	Jan.	112,500	Jan.	157,500
Feb.	51,000	Feb.	54,700	Feb.	52,600	Feb.	36,200	Feb.	82,500	Feb.	128,300	Feb.	186,200	Feb.	258,500	Feb.	156,500	Feb.	208,100
March	84,500	March	96,600	March	91,500	March	59,200	March	149,000	March	228,100	March	285,900	March	380,100	March	192,700	March	265,000
April	121,000	April	159,300	April	158,300	April	127,400	April	255,400	April	281,900	April	321,300	April	363,500	April	228,100		
May	118,500	May	153,500	May	144,200	May	208,200	May	268,600	May	261,100	May	344,200	May	359,000	May	193,500		
June	93,000	June	122,200	June	163,300	June	208,700	June	187,600	June	174,860	June	253,600	June	286,200	June	121,300		
July	83,000	July	103,800	July	33,500	July	127,300	July	122,400	July	167,000	July	221,500	July	206,500	July	100,100		
Aug.	72,000	Aug.	89,800	Aug.	28,900	Aug.	98,100	Aug.	87,700	Aug.	120,700	Aug.	117,900	Aug.	135,000	Aug.	105,400		
Sept.	62,500	Sept.	53,200	Sept.	38,100	Sept.	72,300	Sept.	46,300	Sept.	63,852	Sept.	90,000	Sept.	94,400	Sept.	75,800		
Oct.	45,000	Oct.	48,100	Oct.	34,100	Oct.	56,700	Oct.	41,600	Oct.	56,690	Oct.	57,200	Oct.	77,900	Oct.	47,000		
Nov.	37,000	Nov.	39,600	Nov.	26,300	Nov.	27,900	Nov.	35,700	Nov.	57,027	Nov.	83,940	Nov.	97,300	Nov.	40,100		
Dec.	48,500	Dec.	41,500	Dec.	30,100	Dec.	39,300	Dec.	75,800	Dec.	79,240	Dec.	135,100	Dec.	119,000	Dec.	57,213		

LETTERS

(Continued)

(*Concluded from Page 10, Column 5*)

ment for the display and storage of frosted foods.

The records covering a period of years are sufficient to prove that the most profitable merchandising of frosted foods is being done by merchants who use display type equipment.

The American housewife does not know that frosted foods are of uniform quality as stated. In fact, the average housewife is not frosted-food minded and knows little or nothing about them. Therefore, to sell frosted foods successfully, they must be displayed.

It matters not whether the frosted food package itself is especially attractive if properly merchandised. However, packers and distributing organizations are giving more thought to the appearance of their packages and the opportunities they offer from a merchandising standpoint.

Frosted foods are very colorful and if properly displayed will create more interest and sales than would be possible to obtain through the use of a cabinet that is designed for storage only—that we know from experience.

Low temperature combination display and storage cabinets equipped with four (4) plates of water white glass, guaranteeing clear vision for frosted food display, can and are being used most successfully without fear of product discoloration.

When introducing frosted foods to a customer, a very effective way is to remove one package of peas, beans, berries, or whatever the item might be, from the display section of cabinet and place it in the customer's hands. The result—interest is developed through the power of display and the sale is made by smart merchandising.

The article further states that frosted foods are placed in the same category as ice cream. It is true that ice cream is considered as a food product and that the temperatures under which it is kept are approximately the same as those required for the safe-keeping of frosted foods. From a merchandising standpoint, however, there is quite a difference. Frosted foods are highly impulse and comparatively new as far as the general public is concerned.

A merchant cannot sell frosted foods profitably from a storage cabinet placed in the rear of the store, under a counter, or some other location where demand items might be placed. Its sale cannot depend on a display sign hung on the wall or fixed on the cabinet itself. To do a profitable retail volume in frosted foods, proper location and display are very important, plus good salesmanship on the part of the merchant.

Dependable low temperature combination display and storage cabinets, combined with better merchandising methods and uniform quality foods, are what are needed for the success of the frosted food industry as a whole and that is what the public can expect in the future. There are dependable and economical low temperature display cabinets available.

Attached is a sheet showing an illustration and specifications of a Hill model 96-XF self-contained type double display cabinet. This equipment has been created especially for the profitable merchandising of frosted foods. This type cabinet, or any dependable display type equipment offered by others, is what the industry needs to help assure its future success.

C. S. WHITE

Answer: Looking at the leaflet attached to your letter, it appears that the "self-contained combination display and storage frosted foods cabinet" which you are featuring actually supports, rather than refutes, the trend reported in the editorial. This case provides concealed storage for the dealer's stock containing a large variety of frozen food. The display portion of the case is apparently intended only for open packages which may be seen (and possibly handled) by the housewife. It does not appear that these displayed packages are intended for ultimate sale.

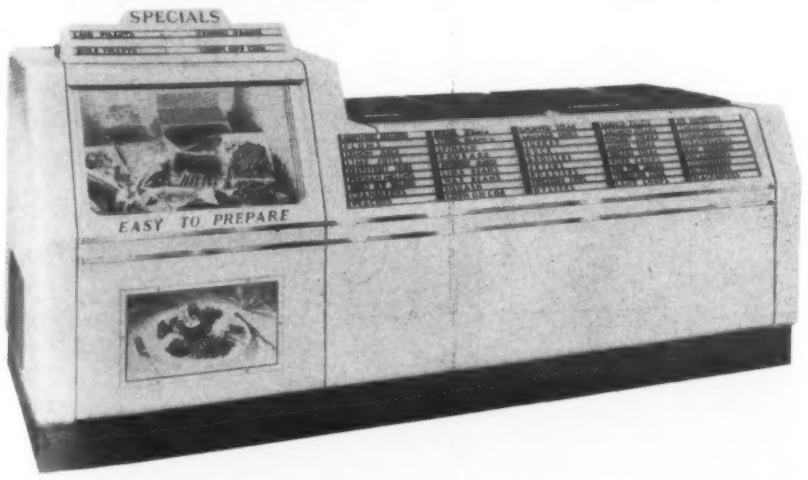
The fourth paragraph of your letter says: "The records covering a period of years are sufficient to prove that the most profitable merchandising of frosted foods is being done by merchants who use display-type equipment." Do you actually have any such records, and if so, can you make them available to us?

Incidentally, we wonder if you read the editorial all the way through. The last three paragraphs read as follows:

"It might also be noted that the use of the chest-type cabinet for quick-frozen foods has become so prevalent because that's the only type being offered by General Foods (Birdseye). This organization, by far the largest in the field, leases chest-type boxes to retailers on a low-rate basis.

"However, independent producers now beginning to come into the field may see an opportunity in this situation. If they can arrange for their products to be **put on exhibition** through the medium of low-temperature display cases, they may achieve a competitive advantage which would give them the toe-hold in the business that they seek.

"For non-frozen perishables, of course, the refrigerated display case is indispensable."



Hill display case mentioned in letter and answer above.

Praise . . . and Warning

"A charter subscriber rejoins the fold."—W. L. Howlett, Westinghouse Electric Supply Co., Toledo, Ohio.

"Find your paper more valuable with each issued received."—E. H. Albrough, Ingersoll, Ont.

"Let this be a warning: Life only costs $3.50."—W. E. Campbell, Dayton, Ohio.

Another Reason You'll Make More Money with the Complete CURTIS Line

The Curtis STORE and OFFICE COOLER

● Long known as one of the most profitable lines in the industry, the addition of the Curtis Refrigerated Store and Office Cooler now makes it even more attractive to you. It opens up a great new market — makes possible more sales and profits.

All classes of retail establishments—stores, offices, banks, etc., are demanding air conditioning now. You can fulfill this demand with Curtis' complete, factory designed, packaged air conditioning unit. It mechanically cools, dehumidifies, circulates and filters the air — adaptable for heating — easily and quickly installed — 3 and 5 ton sizes.

The Curtis line of condensing units includes sizes from 1/6 to 30 H.P., air and water cooled. There's a Curtis model for every refrigeration and air conditioning requirement—also unit coolers, coils, evaporative condensers, etc., precision engineered to deliver economical, efficient, care-free performance.

If you're interested in profits, in increasing your sales, write to Curtis for complete information today.

Curtis Refrigerating Machine Company
Division of Curtis Manufacturing Co.
1912 Kienlen Avenue, St. Louis, Mo.

"Builders of Condensing Units Since 1922"

CURTIS REFRIGERATION AIR CONDITIONING AND COMMERCIAL

45 Air Cooled Units–42 Water Cooled Units–1/6 to 30 H.P.

The Preferred METHYL CHLORIDE *for Service Work*

DU PONT
REG. U.S. PAT. OFF.
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E. I. DU PONT DE NEMOURS & CO., INC.
The R. & H. Chemicals Dept.
Wilmington, Delaware.
District Sales Offices: Baltimore, Boston, Charlotte, Chicago, Cleveland, Kansas City, Newark, New York, Philadelphia, Pittsburgh, San Francisco

Commercial Refrigeration

Old Ideas of What Couldn't Be Done In Commercial 'Given the Gate' By Dealer Who Uses 'Specialty Selling' Methods

By Phil B. Redeker

TULSA, Okla.—M. E. O'Bannon, head of the commercial refrigeration and butcher supply dealership here that bears his name, is disproving a lot of ideas about what **can't** be done in the commercial refrigeration business.

Dealing in Mills condensing units and Koch commercial refrigerator equipment, Mr. O'Bannon has demonstrated that he can run a big time commercial refrigeration operation in a medium-sized town, that an almost state-wide direct-selling operation can be carried out profitably, that there are certain "sales tools" that can be used in commercial refrigeration, and that used equipment taken on trade-ins need not be a liability.

All these are things which many said could never be done in the commercial refrigeration business as it is constituted today.

Mr. O'Bannon's sales methods are "specialty selling" methods. He has a number of men working for him, and they are out continually digging up business, seeing not only those whom they know are prospects, but contacting places that in some cases have only a remote possibility for commercial equipment.

With a branch office in Oklahoma City, Mr. O'Bannon covers almost the entire state of Oklahoma, his men traveling into the country by automobile into every hamlet and crossroads center. Users of equipment sold by the O'Bannon company are carefully tabulated in a book of mimeographed sheets, and there are many dealers who would be pleased to have as many sales as there are towns recorded in this book.

"Sell them on the profit story," is Mr. O'Bannon's theme for commercial selling methods, and in choosing salesmen he looks first for the man who can tell the story of increased profits to the user through the installation of modern equipment.

"There's no way of telling how to find them," says Mr. O'Bannon. "My men have come out of varied types of businesses—one from the hardware trade, another who sold soda fountain specialties, and another one a salesman of electrical appliances. Some of them still don't know a whole lot about refrigeration—but they all can tell the profit story convincingly."

In addition to having men who can tell the right kind of a sales story, who can speak a language the prospect can understand, Mr. O'Bannon believes in the use of sales tools, and he has found three types of "visual" sales helps of particular value. They are:

(1) The papier mache steak furnished by Koch Refrigerators, which is colored and properly labeled and comes apart in layers. One piece shows the steak as it goes into the old style refrigerator, while the other piece shows the steak after it has been in such a refrigerator for a while, demonstrating precisely the parts that will probably have to be trimmed off. Thus the losses that will probably result are neatly shown in a way that the meat market operator can readily see.

(2) Some sales literature showing a cross-section through or cutaway view of the equipment. Too much talk about the technical features of the equipment's construction may confuse a prospect, but to show him how the unit is built with a remark such as "you can see how it is built like a battleship," etc. Such visual demonstrations are far more effective than a lot of talk, Mr. O'Bannon thinks.

(3) The list of users in bound form, classified by cities, and with the model number of equipment which each place purchased. This proves very helpful because the prospect is almost sure to find someone on the list whom he knows, and since O'Bannon believes all his users to be satisfied, the salesman will take the prospect to see any man on the list for a testimonial. Or if the prospect can't spare the time for a visit, the list makes it possible to find a name of a user to whom a phone call can be made for a testimonial without any great difficulty or delay.

TRADE-INS AN ASSET

Probably the majority of commercial refrigerator sales today involve a trade-in of old fixtures. Mr. O'Bannon has put much thought and effort towards making this used equipment an asset rather than a liability.

He has a shop which is devoted to fixing up the used equipment that is taken in. When cases are brought into the shop, the first thing that is done is to have the glass pulled out and the case allowed to dry thoroughly. If new coils are needed they are put in, and the case is then refinished, if necessary, and the glass put in by workers who are skilled in the glazing process.

The used refrigerators are then placed in a showroom **of their own,** apart from the new models.

"Used refrigerators must make new customers, otherwise they would not be worth bothering with," asserts Mr. O'Bannon.

"By fixing up the used jobs properly we get a fair price out of them, and find a market for them in cafes, some of the poorer stores starting in business, and those who think that they can't afford to gamble on good equipment at the present time.

"We sell a high percentage of these people new refrigerators within a short time, many of them before the old equipment has been paid for.

Used refrigeration machines, however, are not reconditioned. Where possible, Mr. O'Bannon gets rid of them by selling them at wholesale to service engineers.

COIN METERS USED

Mr. O'Bannon is making some use of the coin meter plan of financing sales, but prefers to use it mostly as a "last resort" to cut repossessions.

"Repossessions don't help anybody," Mr. O'Bannon philosophizes. "They put the merchant out of business and make an enemy for the dealer.

"I have found the coin meter a pretty good way to forestall some repossessions that I might have had to make otherwise. Some men just can't save up $30 to $50 a month to pay for equipment, but they can find a dollar a day, and for them the coin meter solves a problem."

Mr. O'Bannon is taking another step that some of the sages shake their heads about—namely, he is moving in on the air-conditioning market. He has sold a couple of jobs this year, is figuring on others.

Dispenser Serves Bottled Beer By Glass

Bottled beer and ale can be served by the glass from this new dispenser introduced by Colvin-Templeton, Inc. Increased profits per glass, more sales, cheaper handling, and elimination of periodic coil cleaning are advantages claimed for this product.

* * *

H. Y. Bassett Joins Wolverine Tube

DETROIT—H. Y. Bassett, a graduate engineer with many years of experience in brass and copper research work, has joined the Wolverine Tube Co. organization as a research engineer.

Prior to his affiliation with Chase Copper & Brass Co., Inc. at Waterbury, Conn. some 10 years ago, Mr. Bassett had considerable experience in the copper and zinc mines and smelters of Mexico and the southwest.

After joining Chase, he spent two years in the research department handling casting shop and mill procedure problems, working on casting developments, etc. When Chase completed its new mill at Cleveland in 1930, Mr. Bassett was made assistant metallurgist and spent seven years there handling mill procedure and development sales promotional work.

He left the Chase organization in 1937 and went with Surface Combustion Corp., Toledo to take charge of that firm's sales of industrial furnace equipment to the non-ferrous metal industry.

Dole Plates Used In 1,000 Modernized Cabinets

CHICAGO—During the past two years the Reick-McJunkin Dairy Co. has again placed in operation some 1,000 worn out brine tank ice cream cabinets through use of DoleCo conversion units.

Reports from the company's service department state that service costs and current consumption of these units has been reduced to a minimum.

New Dispenser Serves Bottled Beer By Glass

SAN FRANCISCO—A new beer dispenser that serves bottled beer and ale by the glass has just been introduced by Colvin-Templeton, Inc. First of its kind, the new unit is claimed to have a number of advantages over draught beer dispensing.

Test installations on the unit, known as the "Col-Temp," are said to have shown increases in sales from 51 to 67% in addition to increased profits per glass, because of elimination of waste and handling costs.

In the new unit, beer is dispensed directly from half-gallon bottles turned upside down. This method, it is said, eliminates the handling of heavy barrels and the periodic cleaning of coils.

The Col-Temp unit is said to maintain a controlled cooling temperature and pressure. It is equipped with a twin-cylinder compressor, powered by a General Electric motor.

Height of the unit is adjustable to fit under any height of bar. Top is of Pharlite, burn and stain proof.

"HAVE CLARAGE MAKE THEM!"
Every year we ship to builders of air conditioning units thousands upon thousands of Clarage Blower Wheels and Assemblies.
This smaller equipment is designed with the same skill characteristic of the larger Clarage apparatus—just as carefully fabricated and tested.
And we have sizes to meet ALL REQUIREMENTS—with slow speed operation insuring SILENT PERFORMANCE.
May we have your next inquiry?
CLARAGE FAN COMPANY
KALAMAZOO, MICHIGAN
Sales Offices in All Principal Cities

MASTERCRAFT
ADJUSTABLE PAD AND CARRYING HARNESS
The most efficient and economical equipment made for handling refrigerators safely and without scratching or marring. Pad is separate from harness and both adjustable to all styles and sizes of cabinets. Efficient, sturdy, easily and quickly applied.
Adjustable Pad, $8.30 each
Adjustable Harness, $6.00 each
Name of refrigerator attractively lettered on pad at 50¢ extra.
f.o.b. Chicago.
Write for folder and prices on pads for refrigerators, washers, ironers, ranges, radios, etc.
Pat. Appl'd for

BEARSE MANUFACTURING CO.
3815-3826 Cortland Street, Chicago, Illinois
Incorporated 1921

QuiKold BEVERAGE COOLERS
10 MODELS WRITE FOR CATALOG
S&S COOLERS
LIMA, OHIO

UNIVERSAL COOLER
Our largest customers of many years ago are still our largest customers today. Our policy must be right.
Universal Cooler Corp., Detroit

DEALER OPPORTUNITY OF A LIFETIME GET THE KOCH PROPOSITION TODAY
THE SENSATIONAL dry BEVERAGE COOLER
KOCH ZEROSTREAM
SUPER-FAST CHILLING
The Koch Zerostream Bottle Beverage Cooler appeals to users because from it is served the coldest beer in town. It is made as a full height bar-type cooler and as an underbar cooler in capacities of 16 to 54 cases of 12-oz. bottles.
Koch Zerostreams are made for self-contained or remote condensing unit installation. Koch does not manufacture or sell a condensing unit, which means an extra sale of your condensing unit with every Zerostream sale.
SERVES THE COLDEST BEER IN TOWN
WIRE-PHONE-WRITE . . . KOCH REFRIGERATORS
North Kansas City, Missouri

Major Appliances

This Is the Year For Dishwashers, Says West Coast Dealer Who Has Sold 20

OAKLAND, Calif.—"Electric dishwashers are good merchandise," says E. T. Gorie, sales manager for the Gray Minor dealership. And Mr. Gorie ought to know, for he sold more than twenty dishwashers during the past year.

Maintaining that the usual principles of common-sense selling, tact, and hard work obtain the best results with this appliance, as well as others, Mr. Gorie places the electric dishwasher on the same level as any electrical appliance, stressing it not more nor less than any other, unless the occasion so dictates. Cardinal point in his dishwasher sales plan is to arrange demonstrations in homes of prospects.

"There is so much entertaining in the kitchen these days," Mr. Gorie says, 'that the electric dishwasher is almost indispensable, not alone as a time-saver and convenience, but also as an appliance which identifies the modern hostess. Women who own them would not again be without them, even if they do not do their own work.

"When the servants are off duty and the hostess serves, she is proud to demonstrate her dishwasher, since it fits so neatly into the scheme of things that it instantly becomes one of the most important units."

Mr. Gorie pointed out also that a "mere man" (and what one is not vain about his ability to prepare some special dish?) finds the electric dishwasher a boon when he has to complete his job by "doing the dishes" after his party. Thus, when the purchase of a dishwasher is under consideration, the man of the house enters as a favorable factor of more importance than merely as the source of necessary funds.

"Right now is the 'psychological moment' for dealers to acquire electric dishwasher franchises," says Mr. Gorie. "Hundreds of thousands of people are going to become electric dishwasher-minded during the year," judging by the great amount of interest the appliance is attracting at the Golden Gate Exposition.

General Electric's "Magic Kitchen" at the Exposition, automatic voice and action display, which features an illuminated electric dishwasher in the foreground, is packed for every demonstration. Visitors from all over the country watch the demonstration of the washer, and are "sold" on the appliance.

"When these people return to their homes, they are going to look for electric dishwashers at their local dealers' and be disappointed if they do not have offers of demonstrations," Mr. Gorie declares.

"If I were a dealer anywhere in the country and not showing an electric dishwasher, I would be inclined to put one in the front window with a sign, 'This is the electric dishwasher you saw at the Fair.'"

18,000 Roasters Sold In Milwaukee In 1938

MILWAUKEE—Due chiefly to the promotional influence of cooking schools and cookie shows, some 18,000 electric roasters were sold in Milwaukee last year, according to reports from this city.

Huge cooking schools, with complete electric roaster demonstrations by home economists of Wisconsin Electric Power Co. were responsible for many of these sales. These schools were open to roaster owners as well as to roaster prospects, and owners who attended learned many new uses of the roasters and were introduced to innumerable new recipes for roaster cooking. This new-found information was naturally communicated, in time, to the neighbors at home, and many new customers were obtained in this way.

The cookie show idea was another which stimulated widespread interest. This promotion, to which the general public was invited, took place in the utility's display room, and consisted of demonstrations by the company's home economists of the many different kinds of cookies which can be baked in the electric roaster.

All-Electric Kitchen Installed In Peoples Furniture Co.

SPRUCE PINE, N. C.—An all-electric kitchen has been installed on the first floor of The Peoples Furniture Co., General Electric dealership operated here by Mr. and Mrs. Arnold Phillips.

Padlocking Oven Door Impresses Prospects

HUNTINGTON PARK, Calif.—Padlock the oven door if you want to impress your electric range prospects—that's the advice of the owner and operator of B. L. Russell Co. here. And Mr. Russell should know, for he's used this scheme successfully himself. Here's how the stunt was worked:

Twenty-five women who were really "live" prospects were invited to the store to witness this unique cooking demonstration. A large turkey, ready to cook, was placed in the oven of a stock model electric range. Then a man from the local utility was called in to rope the oven door shut and then to padlock it. With the oven in this condition, the home economist turned on the current, set the time control, and then went on with other demonstrations, paying no further attention to the oven or the turkey.

At exactly the right time, she went to the telephone and asked the utility to send a man to unlock the oven. He came and removed the padlock, the prospects unwound the rope and opened the oven door, and there was the turkey—perfectly cooked!

The dramatics of the stunt gave the prospects something to talk about and to remember, and proved beyond a doubt that range timing could be depended upon. Mr. Russell declared that this promotion paid for itself immediately.

Another plan which Mr. Russell uses to close particularly "hot" prospects is to give each one an exclusive one-hour lesson in range cooking. The prospect is invited to the store, where she prepares one dish from the store's supplies, doing all the work herself and taking the product of her efforts home with her.

Value of this plan, Mr. Russell points out, lies in the opportunity it offers to overcome the prospect's pet objection to electric ranges. Perhaps she does not think the range will bake quickly enough. Perhaps she feels that broiling is too slow. But whatever the complaint, the salesman attempts to determine it before the demonstration—and then when she comes for her lesson he stresses this point as subtly as he can. In every case so far, Mr. Russell reports, the "lesson" has banished the objection.

Kitchen Bureau Slogan Is Proved Understatement

NEWPORT NEWS, Va.—"Electric cooking costs half what you think," the slogan currently being advocated by Modern Kitchen Bureau as a means of wooing new electric range customers, proved to be somewhat of an exaggeration in an experiment conducted by Nachman's department store here.

This store recently invited 150 selected prospects to a cooking demonstration at the store. Food equal to 36 meals, or meals for four people for three days, was cooked, and prizes were offered for best guesses as to cooking cost.

Guesses of the attending range prospects averaged 57 cents. Actual cost: 26 cents.

Low Cost & Convenience Are Stressed In Detroit Water Heater Drive

DETROIT—In a drive for commercial electric water heating customers, Detroit Edison Co. points out to local business firms that for only 10 cents a day, they can enjoy 60 gallons of 160° water.

Hot water on demand, at the turn of the faucet, is mentioned as a convenience feature of electric water heater service; fact that the water, once heated, is stored until required, and that a tank of just the right size can be selected, is pointed to as contributing to economy of the service.

Enclosure is a double blotter-type folder.

Westinghouse Quiz Game Promotes Heaters

MANSFIELD, Ohio — Thermometers instead of elbows and fingertips would be used to tell temperatures, if homemakers knew all the answers to the question, "How hot is hot," as asked in an entertaining and instructive quiz game just issued by the water heater section of the Westinghouse merchandising division.

Accompanying the game is a handy glass thermometer in which are listed correct temperatures for the baby's bath, tepid bath, hot bath, water in a clothes washer and electric dishwasher, and for hand washing of dishes.

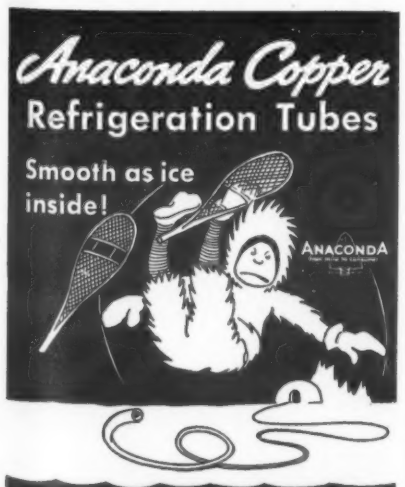
The game itself comprises 50 questions and spaces for writing answers, which may be checked against official answers on the cover.

Virtually everyone knows the normal temperature of the human body, but many persons quizzed to date have given erroneous answers to questions such as, "Can hot water injure linens?", "How hot should water be for washing dishes?", "What temperature can be especially harmful to woolens?", "What kind of a bath is good for physical fatigue?", and numerous others.

The quiz game shows the importance of hot water in promoting family health and comfort, and suggests many ways in which it saves time and lightens housework.

Plymouth Electric Co. Named Speed Queen Distributor

NEW HAVEN, Conn.—Plymouth Electric Co. has been appointed distributor of Speed Queen washers and ironers for the state of Connecticut.

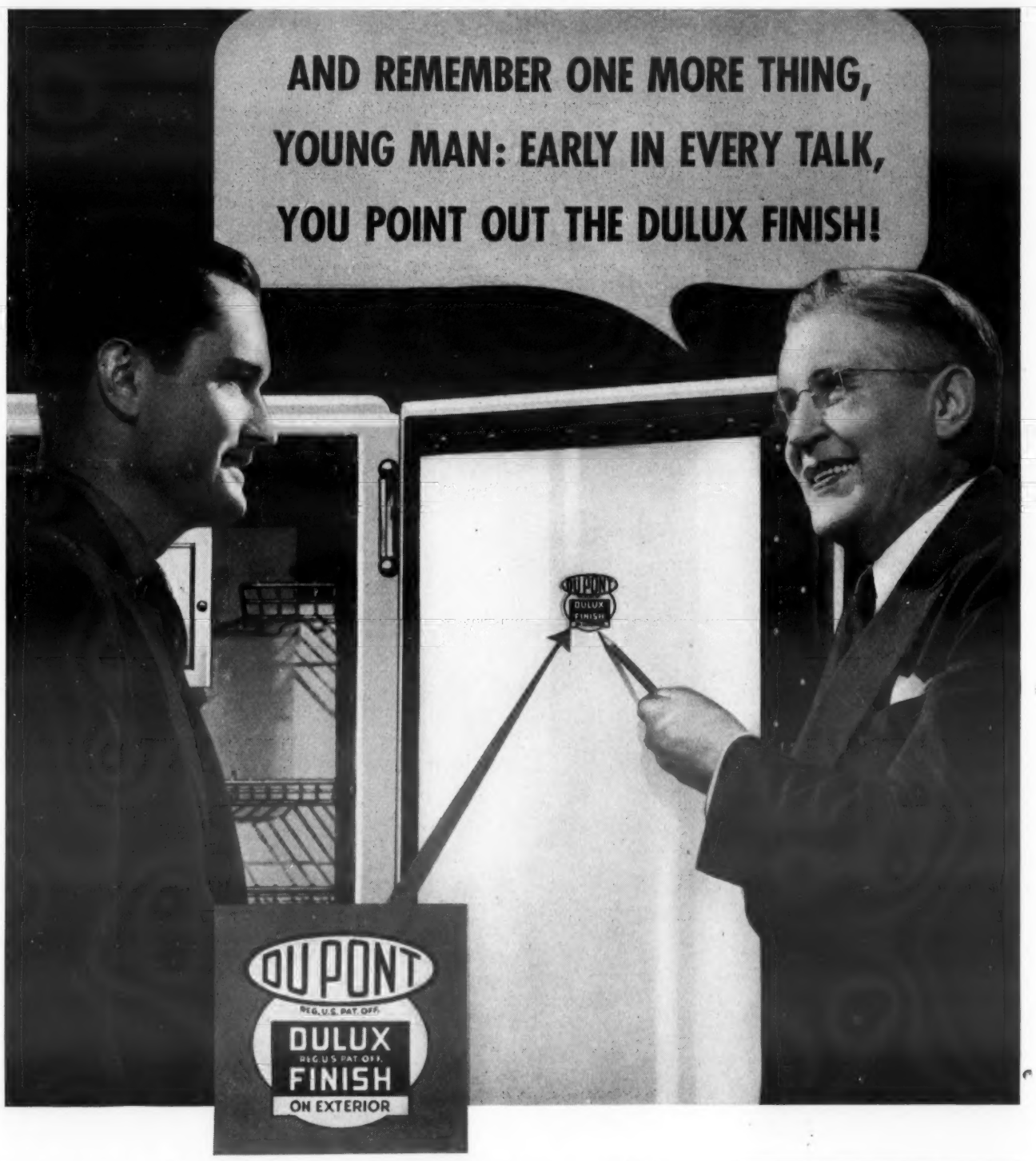


MANHATTAN V-BELTS

Customer Builders....

Trouble-free drives because they are built for steady service. Exclusive construction—endless whipcord strength member completely floated in rubber and placed in the neutral axis—resists destructive internal heat, stretch and side-wear. Thus, they remain flexible, strong, smooth running, noiseless.

THE MANHATTAN RUBBER MANUFACTURING DIVISION
of Raybestos-Manhattan, Inc.
45 TOWNSEND STREET PASSAIC, N. J.



"THAT'S standing orders for all the salesmen on my payroll. We can't afford to overlook any bets that may close a sale quicker.

"And DULUX is one of the best little sales-clinchers there is. It's the finish women have dreamed of for years. It's a white finish that *stays* white with minimum effort of cleaning. It is resistant to the hard wear of daily service—chipping, cracking and grease. It's the finish with every quality women want . . . and I want you to tell 'em about it, every time.

"Just remember, son, that 80% of all refrigerator manufacturers use DULUX. There's a good reason for that . . . and I want you to be sure your prospects *know it! I* know that DULUX helps sell refrigerators *faster*."

Feature DULUX in *your* selling! *IT PAYS!* E. I. du Pont de Nemours & Co., Inc., Finishes Division, Wilmington, Delaware.

DU PONT
REG. U. S. PAT. OFF.
DULUX
REG. U. S. PAT. OFF.
The Modern Refrigerator Finish

Engineering

New Chart Simplifies Accurate Selection Of Correct Piping and Tubing Sizes For Commercial Refrigeration Installations

CHICAGO—A new piping and tube size selector chart has been made available by the Electrimatic Corp. of this city.

This chart attempts to present in a single collection of data all the information necessary to figure accurately the proper size liquid and suction line for almost any commercial refrigeration installation.

The alignment diagram (Fig. 1) shows the suction line size to use for a 100-foot long suction line if 2 lbs. total suction line pressure drop is permissible. (Two pounds is now considered as the practical ideal for suction lines.)

This chart is read by laying a ruler through the figures for the evaporator temperature and the tonnage of the evaporator (under the refrigerant used). The dotted line shows how this is done, using for an example a 5-ton ammonia evaporator at 18° F.

The dotted line passing through these two points indicates that the suction line from this evaporator should have an actual internal diameter of 1.1 inches. Reading horizontally from this internal diameter, the user of the chart knows that he has his choice of 1¼-inch O. D. aluminum tube or 1¼-inch extra heavy steel pipe, or 1¼-inch standard weight steel pipe. (All three are obviously somewhat oversize.)

Table 1 indicates the liquid line size to use for a 100-foot long liquid line if a 5-lb. total liquid line pressure drop is permissible. (Five lbs. is now considered the practical ideal for liquid lines, according to Electrimatic Corp. officials.) In the preceding example, the liquid line size required is between 0.180 inches and 0.305 inches actual inside diameter and thus a choice is given of ⅜-inch O.D. aluminum tubing or ¼-inch standard weight steel pipe (both are obviously much oversize).

WHAT TABLE 1 SHOWS

At the bottom of Table 1 is the data for specific gravity, density, and loss in head pressure due to vertical rise ("lift") of the liquid refrigerant. For example, if the vertical distance from the receiver to the expansion valve in the foregoing example were 10 feet, there would be an additional pressure loss of 2.64 lbs. per square inch.

It is interesting to note that a negative pressure loss occurs if the "lift" is downward. The lift factor for suction lines is not attempted in this chart. The bottom line of the liquid line chart is chiefly meant to impress on the user of the chart the fact that lift may be as important as length. The factors given on this line are to be used cautiously as they cannot be varied merely by varying the pipe size.

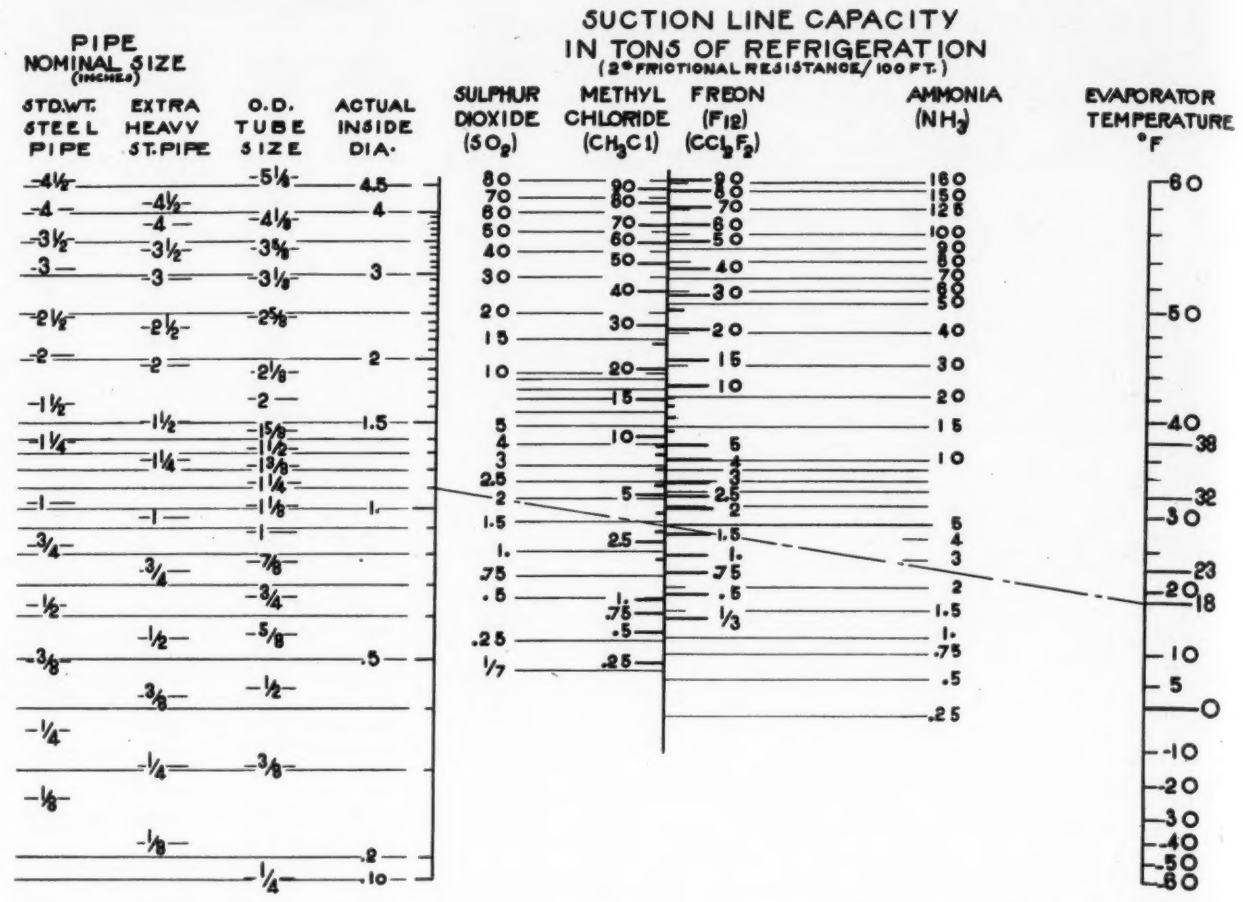
Table 2 gives the "Equivalent Resistance of Various Fittings In Lineal Feet of Straight Pipe." This table is borrowed from the NAPRE "Data Book." All other data was collected and prepared by Hal McPherson and Rollin Lacart of the Electrimatic Corp.

This table applies to both liquid and suction lines, and can best be explained by example. Suppose in the 1¼-inch suction line of the example used there are five elbows. The actual measured length of the line should be considered increased 5 x 2, or 10 feet, by these fittings. Table 2 is applicable to both suction and liquid line.

A properly designed solenoid valve

(*Concluded on Page 15, Column 1*)

Fig. 1—Suction Line Sizes For Run of 100 Feet



Alignment diagram shows the suction line size to be used if 2 lbs. suction line pressure drop is allowable. Dotted line indicates how ruler would be placed across the chart for a certain set of conditions. For shorter runs of tubing see explanation in latter part of accompanying article.

Table 1—Liquid Line Size To Use For 100-Ft. Run If 5-Lb. Pressure Drop Is Permissible

Pipe or Copper Tube Size Nominal Size Steel Pipe Std. Wt.	Ext. Heavy	Code Copper Tubing (Actual Size) O.D.	I.D.	Liquid Line Capacity In Tons (Based on 5-lb. Friction Loss per 100 Ft.) "Freon" "P-12"	Methyl CH_3Cl	Sulphur SO_2	Ammonia NH_3	Carbon Dioxide CO_2	Carrene No. 1* CH_2Cl_2
⅛	...	¼	0.180	⅛	1½	¾	4	..	..
¼	...	⅜	0.305	1½	4	2	9	..	3
...	⅜	½	0.430	3	7½	4	17	..	7½
½	½	⅝	0.555	5	12½	6	26	20	..
...	...	¾	0.666	7	18	8½	37	..	..
¾	¾	⅞	0.777	9	26	11½	50	50	..
...	1	1	0.889	12	34	15	64	..	..
1	...	1⅛	1.001	15	44	18	80	..	..
...	...	1¼	1.113	18	54	22	96	75	..
...	1¼	1⅜	1.225	22	65	26	110	..	..
1¼	...	1½	1.335	26	76	31	170	105	..
...	1½	1⅝	1.445	30	86	35	..	..	..
1½	...	2	1.669	46	125	52	260	160	..
2	2	2⅛	1.893	53	175	60	420	300	..
2½	2½	2⅝	2.465	84	275	..	675	435	..
3	3	3⅛	2.907	130	..	..	..	..	..
3½	4	3⅝	3.385	..	..	..	..	..	..
4	4½	4⅛	3.857	..	..	..	..	..	..
4½	5	5⅛	4.625	..	..	..	..	..	..
Specific Gravity (60° F.)				1.34	0.92	1.39	0.61	0.81	1.33
Density—Lb/Cu. Ft. (60° F.)				83.78	57.62	86.95	38.33	50.71	93
Head or Lift —Lbs/Sq. In/Vertical Ft.				0.581	0.399	0.602	0.264	0.351	0.576
—Equivalent Lineal Ft. Per Vertical Ft.				11.6	8.0	12.1	5.3	7.0	11.5

*With Carrene No. 1 total pressure loss must not exceed 2 lbs. (40 feet of the size pipe shown).

Table 2—Equivalent Resistance of Various Fittings In Lineal Feet of Straight Pipe

Size of Pipe In.	Std. Elbow	Std. 45° Elbow	Run Std. Tee	Side Outlet Tee	Bull Head Tee	Close Return Bend	Gate Valve (Open)	Globe Valve (Open)	Angle Valve (Open)
½	1.1	0.6	0.5	2.0	3.0	1.5	0.4	3.1	1.4
¾	1.5	0.8	0.8	2.9	4.0	2.2	0.6	4.5	2.0
1	2.0	1.0	1.0	3.9	5.0	3.0	0.8	6.0	2.7
1¼	2.7	1.4	1.4	5.5	6.6	4.2	1.1	8.2	3.8
1½	3.5	1.6	1.7	7.0	8.0	5.1	1.3	10.2	4.7
2	4.7	2.0	2.3	9.0	10.1	7.0	1.7	13.5	6.2
2½	5.8	2.5	2.8	11.0	12.3	8.5	2.1	17.0	8.0
3	7.5	3.0	3.8	15.0	15.0	11.0	2.8	21.5	10.2
3½	9.0	3.6	4.5	18.0	17.5	13.2	3.5	26.0	12.0
4	10.8	4.2	5.2	20.5	19.5	16.0	4.0	31.0	14.8
4½	12.0	4.7	6.1	24.0	22.0	18.5	4.6	36.0	17.0
5	14.0	5.2	7.0	27.5	25.0	21.0	5.1	41.0	19.0
6	18.0	6.2	9.0	35.5	30.0	26.0	6.8	51.0	23.5
7	20.5	7.2	10.5	41.0	35.0	31.0	8.0	61.0	28.0
8	25.0	8.2	12.0	50.0	40.0	37.0	9.5	72.0	33.0
9	27.0	9.2	14.0	55.0	44.0	41.0	10.6	82.0	37.0
10	32.0	10.5	16.2	65.0	50.0	50.0	12.3	100.0	45.0

Data obtained from NAPRE Data Book.

GIBSON

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The "Life Insurance of SYLPHON BELLOWS"

Mechanical refrigeration equipment must operate without interruption for long periods with little or no servicing or attention, often under most unfavorable conditions.

That is why Gibson, Norge, Copeland, Stewart-Warner and many other makers of refrigerating units, valves, thermostatic controls and other equipment use Sylphon Bellows and bellows assemblies.

For this highly developed seamless, jointless, metal bellows is as adaptable as it is durable . . . equally effective as thermostat element, crankshaft seal, packless gland pressure diaphragm and for many other uses.

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Representatives in All Principal Cities in U. S. A. and in Montreal, Canada and London, England

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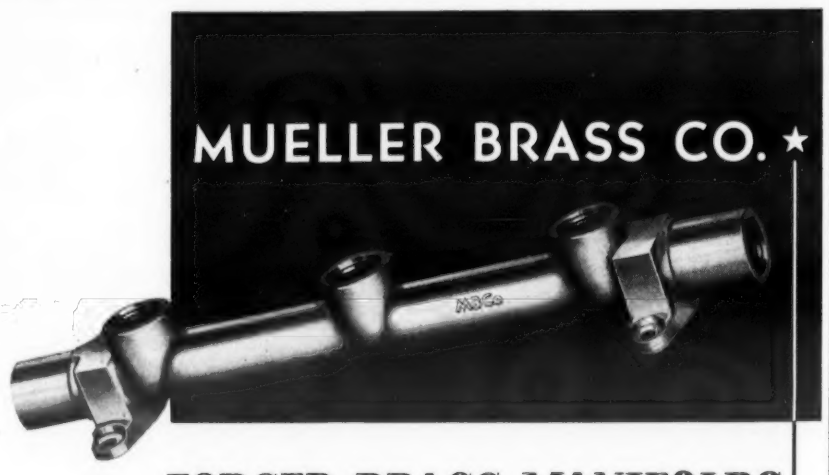

FORGED BRASS MANIFOLDS FOR MULTIPLE INSTALLATIONS

● This sturdy manifold is forged brass with heavy integral valve outlets designed to accommodate various sizes of valves. Mounting brackets are also integral with the body and flats for wrench grips are provided near the end.

Manifolds are available with either two or three valve outlets so that by joining two or more sections together any required number of valves can be used. Each end of each section is provided with an inside pipe thread. Each end of each section is also machined on the outside to dimensions suitable for STREAMLINE Solder Fittings, thus the sections may be joined with either 1/2" pipe nipples or 1-1/8" solder type couplings or tees. Connections to the manifold may also be made either way. The open ends may be closed with pipe plugs or solder type caps.

If two or more sections are to be joined, they may be connected straight in line or by means of a tee between two sections or between two groups of sections. The tee connection reduces flow restriction.

Order through your jobber. He stocks our complete line.

MUELLER BRASS CO. ★
PORT HURON, MICHIGAN.

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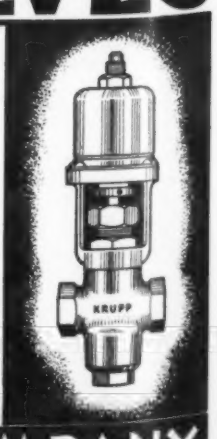
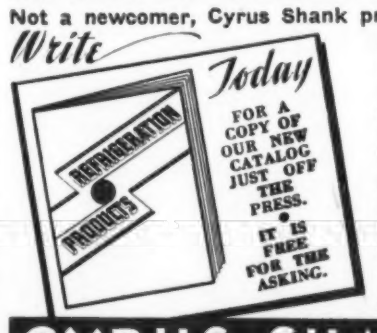
Refrigeration experts who want to cash in on this big reward of customers' good will should investigate the high quality and dependability of KRUPP VALVES.

Not a newcomer, Cyrus Shank products have been the standard of the refrigeration industry for over 27 years—and they are built to meet today's needs. They save and make money by giving peak performance always. Write for prices on Water Regulator Valves, Dehydrators and Strainers.





CYRUS SHANK COMPANY
625 W. JACKSON BLVD. CHICAGO, ILLINOIS

Sizing of Suction and Liquid Lines Aided By Charts, Tables

(*Concluded from Page 14, Column 3*)

having an orifice equal to the internal pipe diameter can be considered as a globe valve and in the present 1¼-inch size would be equivalent to adding 6 feet to length of the suction line.

"There is prevalent an absurd practice of 'rating' solenoid valves in 'tons capacity,'" declares Mr. McPherson. "This practice is convenient but far from the facts. Another prevalent malpractice is to economize by using a solenoid valve with an orifice smaller than the pipe size and the effect of this practice on the equivalent pipe length is covered by a special bulletin which we have published."

Table 3 showing "Comparative Pipe Capacity Versus Pipe Length" offers a ready means of using the two previously described charts for suction and liquid lines of lengths other than 100 feet. These columns indicate the relative pipe size to use in order to still have only a 2-lb. total suction line pressure loss or a 5-lb. total liquid line pressure loss for various pipe lengths.

For example, if the suction and liquid lines in the examples used previously were only 25 feet long, lines with only 50% as great a capacity as shown would be needed. In other words, the installation man would use lines having half the capacity of ¼ inch and 1¼-inch steel pipe.

Table 4, "Comparative Capacities of Standard Pipe" shows that a ¼-inch standard pipe has 1.9 times the capacity of ⅛-inch pipe. Hence, ⅛-inch pipe has a sufficient capacity for the liquid line. A 1¼-inch standard pipe has 1.6 times the capacity of a 1-inch pipe. Hence, a 1-inch pipe is ample for the suction line.

Table 4—Comparative Capacities of Standard Pipe

Size of Pipe Inches	⅛	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4	5	6	7	8
⅛	1.0																
¼	1.9	1.0															
⅜	3.3	1.8	1.0														
½	5.3	2.9	1.5	1.0													
¾	9.3	5.2	2.7	1.7	1.0												
1	14.7	7.7	4.1	2.6	1.6	1.0											
1¼	26.2	14.3	7.8	4.9	2.8	1.6	1.0										
1½	36.0	19.5	10.6	6.6	3.8	2.4	1.3	1.0									
2	58.0	32.0	17.5	11.0	6.9	3.9	2.2	1.6	1.0								
2½	84.0	45.0	25.0	15.7	9.0	5.5	3.2	2.3	1.4	1.0							
3	129.0	71.0	38.0	24.0	13.8	8.5	5.0	3.6	2.2	1.5	1.0						
3½	173.0	95.0	52.0	32.0	18.5	11.4	6.0	4.8	2.9	2.0	1.3	1.0					
4	223.0	122.0	66.0	42.0	24.0	14.7	8.5	6.2	3.8	2.6	1.7	1.3	1.0				
5	350.0	192.0	104.0	66.0	37.0	23.0	13.3	9.8	5.9	4.1	2.7	2.0	1.5	1.0			
6	505.0	278.0	151.0	95.0	54.0	33.0	19.0	14.1	8.6	6.0	3.9	2.9	2.2	1.4	1.0		
7	677.0	372.0	202.0	127.0	71.0	50.0	26.0	19.0	11.5	8.1	5.2	3.9	3.0	1.9	1.3	1.0	
8	878.0	481.0	261.0	164.0	94.0	58.0	35.0	25.0	14.9	10.4	6.7	5.0	3.9	2.5	1.7	1.3	1.0

Table 3—Pipe Capacity Vs. Pipe Length

(Based on 2-lb. total friction)

Length Of Pipe In Feet	Pipe Capacity Multiplier
5	.22
10	.32
25	.50
50	.72
75	.87
100	1.00
150	1.23
200	1.42
300	1.74
400	2.00
500	2.24
600	2.45
700	2.65
800	2.84
900	3.00
1,000	3.17

Dorsey Hines Leaves G-E Organization

BALTIMORE — Dorsey F. Hines has resigned as district manager of the Baltimore branch of the General Electric Supply Corp. He has not announced his plans for the immediate future. Prior to becoming manager of the local branch of General Electric Supply Corp., Mr. Hines was a distributor of the General Electric refrigerator line and other major appliances.

'Fredericksen Co.' Now Saginaw Bearing Co.

SAGINAW, Mich.—Saginaw Bearing Co. has been adopted as the new firm name of Fredericksen Co., manufacturer of "Sabeco" bronze seal rings, seal noses, bushings, and bearings, reports Karl A. Agricola, general manager. New name has been chosen as more descriptive of the company's products.

J. H. Burke To Handle Philco Products

BOSTON—J. H. Burke Co. has been appointed distributor of all Philco products in the eastern Massachusetts and southern New Hampshire area. This covers radios, refrigerators, and room coolers.

Serviceman For Anheuser-Busch Is Winner In First Tube-Bending Contest Held In St. Louis

ST. LOUIS — Keen interest and competition marked the first refrigeration tube-bending contest held by the St. Louis chapter of the Refrigeration Service Engineers Society at its April meeting in the auditorium of the David Rankin School of Mechanical Trades.

Regular Imperial Brass project and materials were used in the contest which was in charge of Charles Anderson, Imperial representative, and George Franck, chief refrigeration engineer.

Winner was William Blanke, of Anheuser-Busch, Inc., who chose a paid-up R.S.E.S. membership as his prize. His time for the project was 22 minutes and 5 seconds. E. C. Fix, service engineer for Quality Dairy Co., turned in a perfect problem, but his elapsed time of 35 minutes and 35 seconds put him in second place.

In third position was L. L. Vollman, chief installation and service engineer for Pevely Dairy Co., whose time was 23 minutes and 50 seconds, who lost higher ranking because he reversed the open end of the project in the final assembly. Mr. Fix received a charging and testing unit as his award, and Mr. Vollman was given a tube-cutter.

Other entrants in the contest were Page Holliday, F. J. Karl, C. Ochs, and J. O. Spitznagel. Judges were M. Bridges, S. N. Moehler, and R. Weickert, and M. Brown was timekeeper. Attendance awards went to O. H. Gerken (single-cylinder compressor), Mac Bridges (slide rule), and J. Goldberg (thermo valve).

New Weather Forecast Service Offered

LOS ANGELES — Long-range weather forecasts whose accuracy is claimed to be in excess of 90%, are now being published and distributed by Steller-Millar of this city. The forecasts are prepared by Dr. Irving P. Krick, professor of meteorology, California Institute of Technology, Pasadena, developer of the "air-mass" or three-dimensional method of weather forecasting.

Two types of forecasts are issued—one, predicting the weather in detail over the United States for a period of five or six days in advance from the day the forecast is received by the subscriber and second, a monthly weather indication which predicts the weather trends for the coming month, giving amounts of precipitation expected for the month, periods when precipitation will occur and various temperatures anticipated.

Geo. Bright Is Injured

DETROIT — George B. Bright, popular Detroit consulting engineer, is hobbling around on crutches these days as a result of a broken leg suffered last month. Both bones were broken above the ankle, and the leg will be in a cast for another 10 days.

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...the most complete line of thermostatic expansion valves, and the only line of thermostatic expansion valves with selective charges that give you peak performance on all installations.
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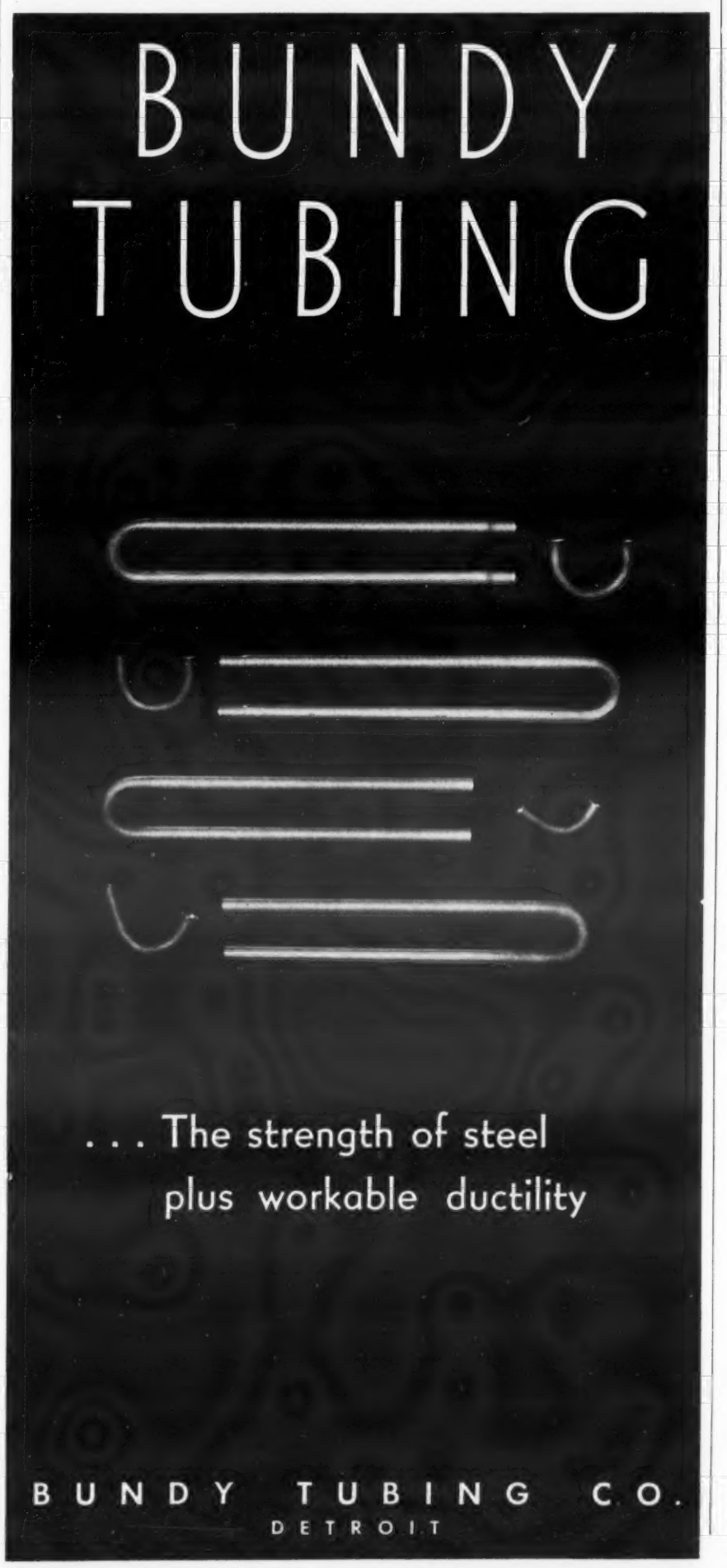

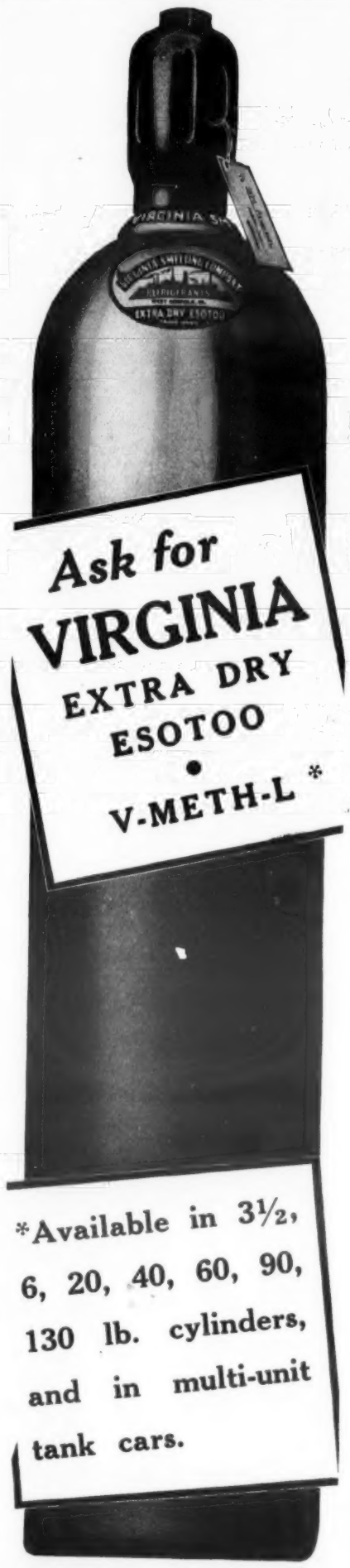

Commercial Service

Service Methods on Soda Fountains With Instantaneous Water Coolers (Cont.)

By Arch Black and Dean C. Seitz

(B) Complaint—Warm Water from the Draught Arm

1. CONDENSING UNIT OVERLOADED

Both the Frigidaire instantaneous water cooler and the condensing unit have definite maximum capacities. If either or both are overloaded, the exit water temperature will rise rapidly. The capacity of the instantaneous water cooler is approximately 5,600 B.t.u. per hour. The cooler will be overloaded if the amount of water drawn per hour requires more than 5,600 B.t.u. for refrigeration. The condensing unit will be overloaded if its rating is less than 5,600 B.t.u. capacity at 25 lbs. suction pressure. This means that either a ½ or a ¾-hp. condensing unit may be overloaded.

Inasmuch as an instantaneous water cooler removes the heat from the water as the water passes through it, to obtain the maximum capacity given in the paragraph above the water must be evenly and uniformly drawn throughout the entire period of the hour. In other words the capacity of the instantaneous cooler is approximately 100 B.t.u. per minute. From this figure can be calculated the amount of water which may be cooled each minute.

To determine definitely if the condensing unit is overloaded, place a suction pressure gauge on the suction valve at the crankcase. If the pressure while water is being drawn remains above 30 lbs., the chances are that the condensing unit is too small to handle the installation.

The entire installation should be recalculated and a compressor recommendation given to the local agent or distributor of the soda fountain manufacturer. Before definitely deciding that either the condensing unit or the instantaneous cooler or both are overloaded, the remaining possible causes for warm water should be checked carefully.

2. EXPANSION VALVE NOT OPEN SUFFICIENTLY WIDE

If the thermostatic expansion valve supplying the instantaneous cooler with refrigerant is not open wide enough, the instantaneous cooler will not receive as much refrigerant as it requires. Under these conditions the level of the refrigerant in the instantaneous cooler will be lower and a portion of the water cooling coil will not be immersed in the low pressure liquid refrigerant, but will be in the gas stage above the refrigerant level.

This condition will greatly reduce the capacity of the instantaneous cooler and will permit warm water to be delivered from the draught arm. The suction line from the instantaneous cooler will be practically at room temperature.

The remedy is to open the expansion valve by turning the adjustment in, or clockwise, until the suction line shows a trace of frost at the point where it leaves the LTV-20 valve. The expansion valve should not be open so wide that a hard frost forms on the suction line from the LTV-20 valve but that merely a trace of frost forms, which readily disappears.

All adjustments of the water cooling thermostatic expansion valve should be made with the condensing unit in operation and with water drawn from the draught arm as in normal service.

3. LTV-20 VALVE ADJUSTED TOO WARM

The normal adjustment of the instantaneous cooler pressure regulating valve is obtained by removing the adjusting screw completely and then screwing it in approximately two revolutions after it touches the adjusting spring. By allowing water to run very slowly, the minimum temperature of the water can be checked with a thermometer. It should not be allowed to leave the draught arm at a temperature below 37° F. To lower the temperature the adjusting screw may be turned out, or counterclockwise. To raise the temperature turn it in, or clockwise.

4. VERY SHORT OF REFRIGERANT

If the instantaneous water cooler is extremely short of refrigerant, practically no refrigeration will be obtained in the water cooler and warm water will be delivered from the draught arm. Under these conditions, the expansion valve will hiss continuously and the liquid line sight glass will "flash." The remedy is to add refrigerant until the expansion valve no longer hisses continuously or until the sight glass shows no further bubbles.

5. TOO MANY GLASSES OF WATER DRAWN WITHOUT CLOSING THE DRAUGHT ARM FAUCET

As stated above, the instantaneous water cooler removes the heat from the water as the water flows through the coils inside the cooler. There is no reservoir or cold water standing in the cooler. It holds approximately 2½ glasses of water. If five or six glasses are drawn in rapid succession without closing the draught arm, the cooler will not have a chance to refrigerate the water as rapidly as it passes through it. No more than three or four glasses should be drawn without closing the faucet.

The very short interval of time which the condensing unit gains by closing the faucet is the secret of obtaining maximum efficiency from an instantaneous cooler. These are the instructions for drawing both city and soda water, and should be given to both the owner and the operator of the soda fountain.

A leaky draught arm is a very expensive luxury for the owner of a soda fountain. Water leaking from a draught arm will cause the condensing unit to run unneccessarily. Both the owner and the operator of the soda fountain should be cautioned on the point.

6. HIGH PRESSURE CUT-OUT STOPS CONDENSING UNIT

The remedy is to locate and correct the source of the high pressure.

7. LIQUID LINE OR SUCTION LINE VALVE CLOSED

Both the cause and the remedy are obvious.

8. LIQUID LINE STRAINER PLUGGED

Replace the plugged strainer. Any other restriction in the liquid line will produce the same result.

9. FUSE BLOWN

If the condensing unit is not operating when the service engineer arrives, the first point to check is the electric circuit. If a fuse is blown or an electric switch pulled, the remedy is obvious.

10. WATER RUNNING THROUGH THE INSTANTANEOUS COOLER BACKWARDS

If the water runs through the instantaneous cooler in the wrong direction, warm water will be delivered before the expansion valve opens to refill the cooler with refrigerant. The inlet and the outlet of the instantaneous cooler are plainly marked and should be carefully followed in making any changes. The water enters the instantaneous cooler at the top and leaves the cooler at the bottom. The city water should be connected to the coil labelled "C-U." The soda water should be connected to the coil labelled "SS."

11. THERMOSTATIC EXPANSION VALVE BULB HAS LOST ITS CHARGE

The only remedy is to replace the thermostatic expansion valve with a new one.

What's Gone Before In This Series on Servicing Soda Fountains

The following is an index to the previous articles in this series by Arch Black and Dean C. Seitz on the servicing of soda fountains, counter-type freezers, and low-temperature cabinets.

Introduction—Oct. 19, 1938.

Different Kinds of Refrigeration Systems Used in Soda Fountains—Nov. 2.

Design of the Two Boiler Creamer Unit With General Service Instructions—Nov. 9.

Exact Knowledge Needed in Mixing of Brines and Filling Brine Tanks Used in Soda Fountain Refrigeration—Nov. 16.

Service Complaints & Instructions for the "Two-Boiler" Soda Fountain—Nov. 23, Nov. 30, Dec. 7, and Dec. 14.

Operation of One-Boiler 'Thermo-Syphon' Soda Fountain—Dec. 21.

Service Complaints and Instructions for One & Two-Boiler Thermo-Syphon Systems—Dec. 28.

Service Complaints and Instructions for 'Three-Boiler' Soda Fountain Systems—Jan. 4, 1939.

Service Methods on Cooling Systems for Jar Enclosure Section of Soda Fountains—Jan. 11.

Operation of '1928 Liquid Hook-Up'—Jan. 18.

'1939 Liquid Carbonic' Soda Fountain Operation Outlined for Servicing—Jan. 25.

Hook-Up & Operation of Controls in 1935 Carbonic 'F-12' Fountain—Feb. 1.

1936 Liquid Carbonic Soda Fountain—Feb. 8.

Two Cold Controls & Two Solenoid Valves Used in Late Russ System—Feb. 15.

How Control Valves Are Used in Three Circuits of Russ 1936 Fountains—Feb. 22.

Refrigerant Charge, Line Sizes & Control Setting for Direct Expansion Fountains—March 1.

Correct Methods of Testing Solenoid Valves and Cold Controls—March 8.

Analysis of Service Complaints on Fountains Made & Remedies Given—March 15, March 22, March 29, and April 5.

How Instantaneous Water Coolers Are Incorporated in Soda Fountains—April 12.

Refrigeration Hookups for Soda Fountains Using Instantaneous Water Coolers—April 19.

Installing & Servicing of Controls for Instantaneous Water Cooler Fountains—April 26.

Correct Charging & Setting of Controls for 1937-1938 Fountains Described—May 3.

Service Complaints on Fountains With Instantaneous Water Coolers Analyzed—May 10.

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"Our results have been so productive that we have found it economical and profitable to increase the schedule each year as indicated.

1937 space used: 216 column inches
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-- W. C. Allen, V. P.-Sales, Modern Equipment Corp.

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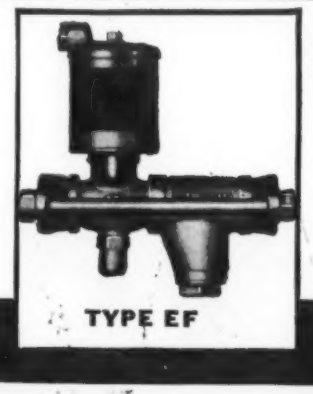
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Flanges for pipe or OD tube.
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New Products

Puffer-Hubbard Markets Dry-Storage Type Beverage Cooler

MINNEAPOLIS — Puffer-Hubbard Mfg. Co. recently has put on the market a dry-storage type bottled beverage cooler which is said to maintain even temperatures throughout the storage compartment through use of a forced-air cooling system.

The cooler is made in lengths of 50 inches, 6 feet, and 8 feet, and is adaptable for either self-contained or remote installation of compressor. Service standard for self-contained unit adds 30 inches to the cabinet's length.

Standard top is 14½ inches wide, but a special 19½-inch top covered with linoleum is available at extra cost.

Normal capacities range from 320 to 640 12-ounce bottles, and maximum capacities from 384 to 768 bottles of this size. Normal cooling capacities of the units are claimed to range from 240 bottles in the smallest model to 408 in the largest unit. The capacities are rated on a 24-hour basis.

In operation, warm air, after being drawn into the blower-type air circulator, operated by a 1/25-hp. motor, is forced through a special "no-frost" 12-tube coil, down along a steel coil casing to the bottom of the cabinet, and thence upward uniformly around the bottles. Bottles nearest the coils get no colder than those anywhere else in the cabinet, it is claimed, because the coils are separated from the storage space by a steel coil casing.

Heavy tinned wire racks keep the bottles off the floor, and permit air circulation beneath them. Cross partitions are adjustable for various loads. Sides, front, and back are of white and black Dulux, and slide-type doors are of black porcelain. Insulation is 3 inches in sides and top, and 4 inches at the bottom.

Evaporator Application Cataloged By 'Recold'

LOS ANGELES—Evaporators for all refrigerants and for a great variety of applications are listed in the latest catalog of "Recold" evaporators manufactured and distributed by Refrigeration Engineering, Inc.

Particularly featured are two evaporators of the blower coil design. One of these is a low temperature unit adaptable for temperatures down to —40° F. and using ordinary faucet water to remove frost accumulation. The other is a "Humid Air" unit said to assure high humidities plus maximum evaporator capacities, and to have improved air distribution (275 f.p.m. compared to 600 f.p.m. in the conventional blower coils).

Also listed in the table of contents are dough retarding units, ice makers, flooded evaporators, fin coils, showcase coils, circulator coils, and drip pans.

In addition to product descriptions and specifications, this 68-page catalog gives page after page of general data on refrigeration engineering, including heat load computations, proper storage temperatures and humidities for various perishable products, etc.

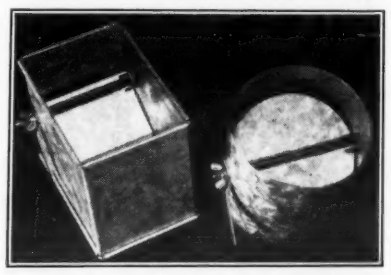
Ice Cube Makers Added To Gloekler Line

PITTSBURGH — Two ice cube makers, of 20 and 50-lb. sizes, have just been added to Gloekler's 1939 commercial refrigeration equipment line.

Twenty-pound model is equipped with eight ice trays, with a capacity of 256 cubes, and is 44 inches high, 26 inches wide, and 24 inches deep. Exterior is of baked Dulux, with doors of heavy gauge steel, and 4 inches of insulation. Tray front is porcelain, and bottom compressor compartment panel is removable.

Fifty-pound model has Dulux interior, chrome hardware, and stainless steel shield in front of the trays. It has 16 trays, with a capacity of 576 cubes per freezing, plus two large storage trays which give an additional ice capacity of 15 lbs. for storage. This model is 64 inches high, 26 inches wide, and 24 inches deep.

Simple Damper Regulator Said To Cut Costs



Damper regulator of simplified design in square and round ducts.

* * *

TOLEDO — A new damper regulator of simplified design, claimed to effect considerable saving in installation time, has been announced by Joal Mfg. Corp.

Use of a square-sided bolt as an axis that fits snugly on clips at each side of the damper plate and anchors it, the bolt fitting in a V-groove in the damper plate so the axis is properly centered, is said to make possible the elimination of nuts, bolts, rivets, and sheet metal screws.

When tightened the installation is said to be chatter-proof and air-tight. Increased rigidity prevents sag or buckling.

Pleasantaire Adds 2 Window-Type Units

WASHINGTON, D. C.—Two new window-type air-conditioning units have been added to the Pleasantaire line.

Smallest is the "Northwind," a ⅓-hp. air-cooled room cooler with a recommended retail price of $139.50.

Other unit is of ½-hp. capacity and also air-cooled type, designed to cool and dehumidify rooms up to 3,500 cu. ft. It has a retail price of $229.50.

Model C-3 Pleasantaire unit is being continued for the fourth year, retailing at $169.50. In addition to cooling, dehumidifying, cleaning, and circulating air in summer, this unit is claimed to bring in outside air through a spun glass filter, to exhaust 25 c.f.m. of stale inside air, and to remove a pint of moisture from the air per hour.

5 Television Receivers Planned By G-E

BRIDGEPORT, Conn.—Five television receiver models, ranging from a picture receiver with sound converter to consoles combining television and all-wave radio, have been announced for spring production by the General Electric radio and television division.

The sets covered by the present announcement are the first which will be offered for sale by the company, according to E. H. Vogel, manager of the division.

Smallest set in the new line is the HM-171, which is a table-type picture receiver with sound converter. It can be used to receive television pictures without sound, or can be used in conjunction with special types of radio receivers which will be made available later.

The table model employs a 5-inch picture tube, included in the complement of 17 tubes. Front controls include brightness, contrast, focus, and tuning, and rear controls include horizontal and vertical size, hold, centering, and distribution. The set stands 14½ inches high and is approximately 20 inches wide and 19 inches deep.

Model HM-185 is a console-type television receiver for both sight and sound, employing a 5-inch picture tube. It has 18 tubes in all, and is 38 inches high, 23 inches wide, and approximately 18 inches deep. Controls are similar to those on the smaller set with the addition of volume and tone control.

Model HM-225 is a console-type television receiver for sight and sound employing 22 tubes, including a 9-inch picture tube. The two remaining console models, the HM-226 and the HM-275, combine all-wave radio and television receiver features. The former employs 29 tubes and the latter 30 tubes, including a 12-inch picture tube. Each has a video-sound, power, and radio chassis.

Approximate price range of the new television receivers is from $250 to $1,000.

Spray Nozzles For Use In Conditioning Announced

CHICAGO—A new line of spray nozzles for use in air conditioning, industrial washing, and chemical processes has been introduced by Spraying Systems Co. here.

The "flat atomizing" spray nozzle is available in ¼ and ⅜-inch male or female pipe connection, and capacities range from 0.2 to 5 g.p.m. at 40 lbs. pressure. A number of different spray angles are available. Standard stock construction is brass with Monel Metal strainer. Other metals can be specified, and the strainer is optional in the smaller capacities.

Cable Connector Introduced By Howell Device Co.

CLEVELAND—The "Joggle-Joint," a quick-acting cable connector designed as a means of joining cables quickly and permanently, has been marketed by Howell Device Co. here.

The connector is locked while in use, and can be disconnected only by deliberate manual action, it is claimed. It consists of two ends, exactly alike, with insulator cover. These ends are sweated or soldered onto the cable to be connected, pressed together, and interlocked. To unlock the joint, the procedure is reversed.

Promotion Folder Issued By Iron Fireman

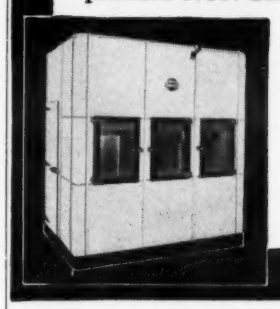
CLEVELAND — A colorful new promotion folder has been issued by Iron Fireman Mfg. Co. to describe its 1939 line of domestic stokers.

Besides illustrating and describing the various features of the Iron Fireman unit, this folder pictures the application of the stoker in the modern home and tells how it can save the homeowner time, labor, and money.

Operation of the unit is explained in detail by a colored diagram, and the difference between a stoker-fed fire, hand-fed fire, and an oil or gas fire is illustrated in a similar manner.

TYLER Refrigerators
The Original WELDED STEEL Commercial
TYLER Treasure Island Sales Fixtures

NEW 1939 FEATURES
Tyler's original welded steel construction is still the most advanced in the commercial refrigeration field. And the 1939 line is the greatest ever. New improvements include wider doors, for greater accessibility; wider front glass for increased visibility and new, patented NON-GLARE lighting system for brighter display.



THE BIG VALUE LINE
Complete line covers wide field. Built from experience with thousands of installations. Offers sensational values because of standardized quantity production. You can meet today's demands with Tylers and make more money. Write NOW for dealer proposition.

New York Office: 601 W. 26th St.
Boston Office: 683 Beacon St.
Chicago Office: 1663 W. Ogden Ave.

TYLER FIXTURE CORP. Dept. R, NILES, MICH.

ADD $ $ $ TO YOUR INCOME
—with A-S-E Froz-n-Food LOCKERS

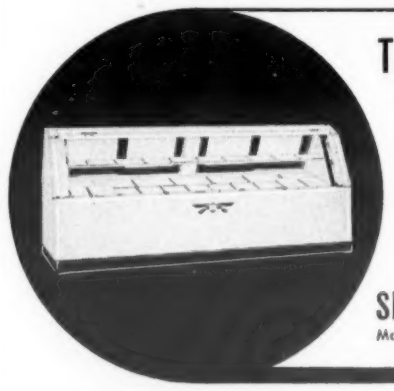
"Cash-in" on the growing popularity of Cold Storage Food Locker Plants, *NOW*. Get the details about the unusual sales opportunity afforded by A-S-E Froz-n-Food Lockers. Dealers are making good profits.

There is an A-S-E Froz-n-Food Locker for *every* cold storage food locker plant requirement—size, type and arrangement for practical, economical installation. Sturdy construction eliminates costly servicing. Plenty of sales-producing features.

Write for complete information about A-S-E Froz-n-Food Lockers today.

Food Locker Plant, Tiskilwa, Ill.

ALL-STEEL-EQUIP COMPANY
INCORPORATED
1517 Kensington Avenue Aurora, Illinois



THE PROFIT LINE FOR '39

Refrigerator and Compressor sales go together. SHERER offers a complete line of cases, coolers and boxes to be sold with your compressors.

Write for catalog and franchise details, mentioning territory desired.

SHERER-GILLETT CO., Marshall, Mich.
Manufacturers of Refrigerated Display and Storage Equipment

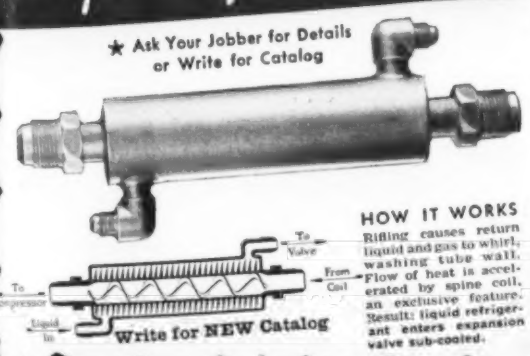
SPEED

When we promise FASTEST SERVICE on all of your orders for
AIR CONDITIONING AND
REFRIGERATION PARTS AND SUPPLIES
we really are talking about the kind of service that never disappoints. 95% of all orders received by us are shipped THE SAME DAY.

THE HARRY ALTER CO.
1728 S. Michigan Avenue, Chicago, Illinois
3 CHICAGO BRANCHES — NORTH, WEST, SOUTH
NEW YORK 161-163 Grand St. | DETROIT 5013 John R. St. | CLEVELAND 4506 Prospect Ave. | ST. LOUIS 2910 Washington Ave.

PEERLESS Capacity Booster

★ Ask Your Jobber for Details or Write for Catalog



HOW IT WORKS
Rifling causes return liquid and gas to whirl, washing tube wall. Flow of heat is accelerated by spine coil, an exclusive feature. Result: liquid refrigerant enters expansion valve sub-cooled.

Write for NEW Catalog

Raises Operating Back Pressures
• • • Increases Coil Capacity

• The Peerless Capacity Booster is a simple, inexpensive unit which will raise the efficiency of any commercial installation, regardless of size. When installed it eliminates "flash gas," and makes every foot of cooling surface work at 100% efficiency. This is accomplished through the sub-cooling of liquid refrigerant by means of returned gas and unevaporated liquid passing through the suction line. It's a natural for picking up extra profits.

PEERLESS OF AMERICA INC.
MAIN FACTORY • GENERAL OFFICES
515 West Thirty-fifth Street, Chicago

New York Factory
43-20 34th Street
Long Island City

Pacific Coast Factory
3000 S. Main Street
Los Angeles

Export Division:
P. O. Box 636, Detroit
Michigan, U.S.A.

THE BUYER'S GUIDE

MILLS
COMPRESSORS
for Commercial Use
Mills Novelty Company • 4100 Fullerton Avenue • Chicago, Illinois

ATTENTION
REFRIGERATION AND APPLIANCE DEALERS
A BLIZZARD FROM THE WEST That has everthing
NO More Wet Bottles, More Loose Labels, More Wet Hands, More Dissatisfied Customers
IT Is More Sanitary, Has Fast Dry Cooling, Has More Capacity, Has Balanced Refrigeration
Territories Now Open ★ Write for Particulars
WEBER SHOWCASE & FIXTURE CO., INC.
5700 Avalon Boulevard • Los Angeles, California
Cable "Weberco" Established 1902

REMPE
FIN COILS *and* PIPE COILS
for Refrigeration and Air Conditioning
AUTODRAFT *For Walk-In Coolers*
UNIT COOLERS *For comfort and low temperature Cooling*
REMPE CO., 340 N. Sacramento Blvd. CHICAGO

ACME PRODUCTS
REFRIGERATION AIR CONDITIONING
PIPE COILS - FINNED COILS - TUBING COILS - AMMONIA SHELL AND TUBE CONDENSERS - FREON CONDENSERS - EVAPORATIVE CONDENSERS - BRINE COOLERS - SHELL AND TUBE WATER COOLERS - DRY EXPANSION WATER COOLERS - UNIT COOLERS - BAUDELOT TYPE WATER COOLERS - ACCCUMULATORS - HI-PEAK STORAGE WATER COOLERS - OIL SEPARATORS LIQUID RECEIVERS - SPECIALTIES
All of the above units made to use with Freon, Methyl Chloride and Ammonia
ACME INDUSTRIES, INC.
JACKSON MICHIGAN

Chieftain Message No. 40
CHIEFTAIN FACTS:
Has Tecumseh something new to offer?
Yes! Watch for our new heavy duty commercial units.
TECUMSEH PRODUCTS CO., TECUMSEH, MICH.
Canadian distributor: Refrigeration Supplies Co., Ltd., London, Ontario

DOORS THAT GLORIFY THE CABINET
THE Ace Hard Rubber "Loxit" units (doors, rails, jambs) are the last word in modern display refrigeration door equipment. They not only improve the appearance of your cabinets but the service obtained. Eight out-standing engineering features have won the enthusiastic endorsement of manufacturers and dealers alike. For detailed information and prices write to: American Hard Rubber Co., 11 Mercer St., New York . . . 111 West Washington St., Chicago, Ill. . . . Akron, Ohio.
ACE "LOXIT" PATENTED DOORS

ROTARY SHAFT SEALS
Increased customer good-will and lowered cost of maintenance always follow the use of Rotary Shaft Seals. A trial will prove their superiority.
IMPROVED MODELS • LOWER PRICES • SEE YOUR JOBBER
ROTARY SEAL COMPANY
E03 West Madison Street, Chicago, Ill.
CONTINENTAL EUROPEAN OFFICE: Waldorpstraat 52, Den Haag, Netherlands. CANADIAN OFFICE: 382 Victoria Avenue, Westmount, Montreal.

Where New Conditioner Fits In

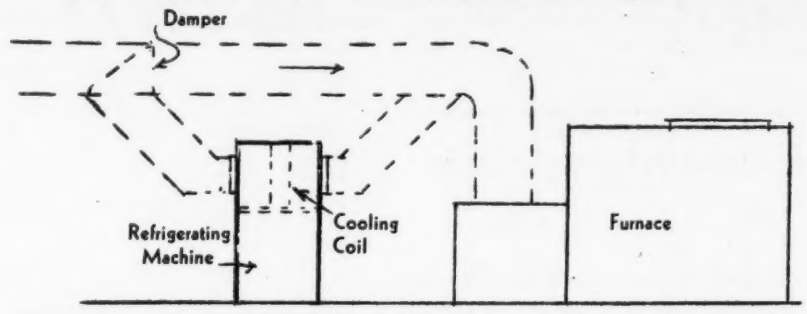


Diagram showing contemplated position of Universal Cooler 'package' cooling unit in relation to other parts of a central forced air system.

Universal Cooler Has New Residence Cooler

(Concluded from Page 1, Column 4)

finished in plain or crackle finish and may be painted any specified color.

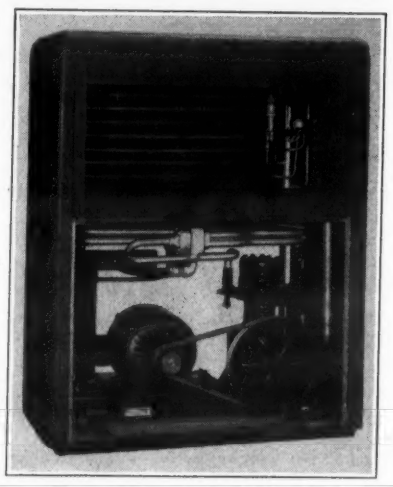
Dimensions of the cabinet, which has rounded corners, are 40 inches wide, 22½ inches deep, and 50 inches high. Overall weight is about 900 lbs.

All refrigerant connections are made and the unit is completely charged at the factory. Only simple electrical, plumbing, and sheet metal connections are necessary to complete the installation.

Control is by means of a thermostat located in the residence or situated in the return air duct. The conditioner may also be controlled by means of a manual switch.

Following its sales policy, Universal Cooler is offering the unit to warm air furnace and winter air-conditioning manufacturers for resale to their dealer organizations.

'Innards' of Home Cooler



Utica Radiator Units Used In Fair's Swiss Pavilion

NEW YORK WORLD'S FAIR — Three air-conditioning systems have been installed in the Switzerland Pavilion here by the Utica Radiator Corp. One 15-hp. unit is used to cool the Swiss restaurant, another of the same size serves the exhibition hall, while a 3-ton unit maintains proper temperatures in the cheese caves.

Tony Sarg's Theater is conditioned by a Utica 5-ton unit.

Demonstration of a Utica air-conditioning system will be made in the Home Building Products building. This live exhibit will include a washed air conditioner, a 5-ton refrigerating compressor, a new O B series oil burning boiler, hot water storage system, radiators, convectors, ducts, grilles, and controls.

Cool-Wave To Be Sold On '$15 Down' Basis

PHILADELPHIA—Newspaper advertisements, cartoons, spot radio announcements, telegrams, window streamers, office cards, fans, blotters, and movie slides are included in the new assortment of promotional and advertising material prepared by Philco to aid in merchandising the "Cool-Wave" air conditioner which it is marketing.

Every medium employed will emphasize the fact that air conditioning for home and office is a present-day reality, not something to be looked for in the future, and that it costs little if any more than a good radio and can be purchased for as little as $15 down. The whole campaign is designed to tell this educational story.

Also just off the press is a four-page rotogravure tabloid newspaper featuring Philco's new "Conservador" electric refrigerator.

High Men In Bendix Spring Drive Win Cruise To Havana

SOUTH BEND, Ind.—Winding up a spring sales drive based on a women's comparison contest and a retail competition, 500 dealers, distributors, and factory officials of Bendix Home Appliances sail May 18 on a 10-day cruise to Havana aboard the liner Veendam.

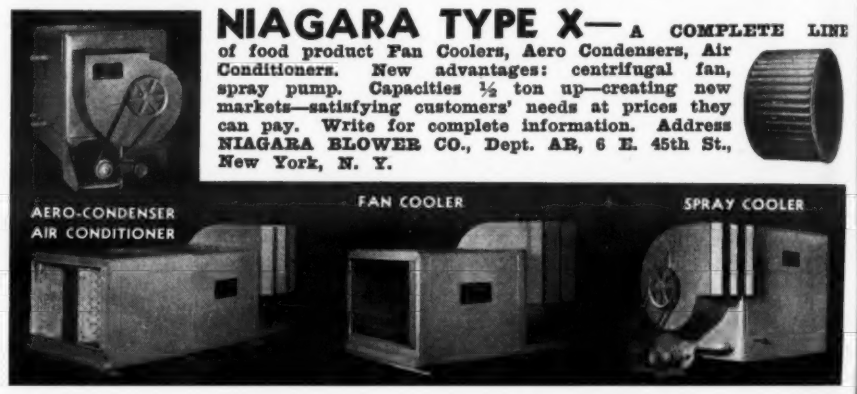
A mass visit to the New York World's Fair will precede the party's embarkation on the liner at Hoboken. The trip was arranged by Parker H. Ericksen, advertising and sales promotion manager, and H. K. Lyons of the Bendix staff.

Tying-in with the spring sales drive was a comparison contest for housewives, with 150 home laundries as prizes for the best 50-word letters contrasting the old and new methods of laundering.

Distributors whose dealers led the field from a percentage of quota standpoint were:

Leo J. Meyberg Co., Los Angeles and San Francisco; Harper-Meggee Corp., Seattle; Walther Bros. Corp., New Orleans; Federal Distributing Co., Kansas City, Mo.; Electric Lamp & Supply Co., St. Louis; L. C. Wiswell Co., Chicago; Midwest Timmerman Co., Davenport, Iowa; M & M Co., Cleveland; Motor Parts Co., Philadelphia; E. B. Latham & Co., Newark; Republic Distributing Co., Grand Rapids, Mich.; Bruno-New York, Inc.; Keller Distributing Co., Springfield, Mass.; J. A. Williams Co., Pittsburgh; and Roskin Distributors, Boston.

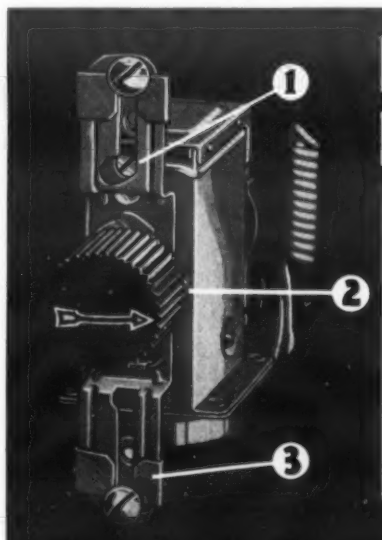
NIAGARA TYPE X— A COMPLETE LINE of food product Fan Coolers, Aero Condensers, Air Conditioners. New advantages: centrifugal fan, spray pump. Capacities ½ ton up—creating new markets—satisfying customers' needs at prices they can pay. Write for complete information. Address NIAGARA BLOWER CO., Dept. AR, 6 E. 45th St., New York, N. Y.



SHARPSHOOTERS
CESCO Healthguard FUME KIT
(1) Methyl Chloride (2) Sulphur Dioxide (3) Ammonia
Good sense says: "take to cover" when these enemies of the serviceman's eyes, nose, throat and lungs go sniping—for they never miss.
The outfit illustrated is easy to buy (inexpensive); easy to carry (light); easy to use (comfortable). Comes all set with cartridges for the three sharpshooters. See at your Jobber's, or order direct today—only $12.85. Will pay out the first time used.

CHICAGO EYE SHIELD CO 2352 WARREN BLVD. CHICAGO, ILLINOIS

LARKIN Refrigeration Products
✓ Check These Money-Makers Into Your Stock Now!
The Patented LARKIN COIL
HUMI-TEMP Units DISSEMINATOR Pans
Instantaneous WATER COOLERS
Today—See Your Jobber or Write Direct to
LARKIN COILS, Inc. General Offices and Factory 519 Fair Street, S. E., ATLANTA, GA.
Branch Factory, 57-59 Eleventh St., New York City



RJS-830 Offers All of These IMPORTANT FEATURES!
THIS small, sturdy, precision-built general replacement control -- which fits the majority of new model household refrigerators having overload protection built in the motor -- gives you these outstanding advantages: --
1. Outside Differential Adjustment
2. Adjustable Dial Pointer
3. Adjustable Mounting Brackets
Easily and quickly installed. Low priced. Completely dependable.
Ranco INC., Columbus, Ohio, USA

Gay Engineering Named Carrier Sales Outlet In Far West Area

(Concluded from Page 1, Column 4)

tion, and heating equipment.

Under this arrangement, the Gay organization, headed by Norman H. Gay, will install Carrier equipment except in specialized cases requiring equipment to meet extraordinary conditions. In its 34 years in business, the West Coast company has made installations totaling more than $40,000,000.

Carrier engineers have been added to the Gay technical organization, and Carrier will continue to maintain an office and warehouse in Los Angeles.

Salesmen's Union Seeks Reduction In Dealers

(Concluded from Page 1, Column 2)

Unless distributors do limit their outlets, Mr. Burbank says, he feels that "the distributor's usefulness, particularly in the sale of refrigerators, will shortly be at an end." His guess is that, in a "dog-eat-dog" market, the distributor will disappear, to be replaced by a "key" dealer.

Smaller dealers would carry only floor samples, drawing from the key dealer's stock except for carload purchases.

Touching on what distributors might do to stabilize the price situation, Mr. Burbank rated the small "man and wife" dealership as one of the principal barriers to price maintenance, since their only appeal is one of cut-prices.

PENN Leads in AUTOMATIC SWITCHES AND CONTROLS
Write for Catalog
PENN ELECTRIC SWITCH CO.
GOSHEN, INDIANA

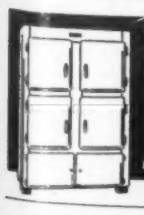
Use CHICAGO SEALS for seal replacements
A complete line in all sizes
CHICAGO SEAL CO.
720 North Wacker Dr., Chicago

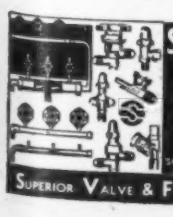
The Most Accurate Control Valve for Small Capacity Systems
The "TK" Thermo Valve
Alco Valve Co., St. Louis, Mo.

BUSH FINNED COILS
FOR
COOLING — HEATING AND AIR CONDITIONING
BUSH MANUFACTURING CO.
HARTFORD, CONN.

For Information on Motors
FOR ALL TYPES OF
Air Conditioning and Refrigeration Equipment
WRITE TO
Wagner Electric Corporation
6441 PLYMOUTH AVE ST. LOUIS, MO

Refrigeration and Air Conditioning
AIRO PARTS · TOOLS · SUPPLIES
Wholesale Only
SUPPLY CO.
2732 N. ASHLAND AVE
CHICAGO ILLINOIS
Write for catalog ASCo on your letterhead


COMMERCIAL REFRIGERATORS
World's most complete line of commercial cabinets — 13 to 84 cu. ft. capacity.
MIDWEST
MFG. COMPANY · GALESBURG, ILL.


SUPERIOR
DIAPHRAGM PACKLESS VALVES · MANIFOLDS · ACCESSORIES AND FITTINGS — FOR THE REFRIGERATION AND AIR CONDITIONING INDUSTRY
SOLD BY LEADING JOBBERS EVERYWHERE
SUPERIOR VALVE & FITTINGS CO. PITTSBURGH, PA.

Varied Program and Inspection Trips Await ASRE

(Concluded from Page 1, Column 3)

facture of chocolate, the air-conditioning equipment in the windowless office building, and the city's huge ice-skating rink.

C. V. Patterson of York Ice Machinery Corp. will present a paper on "Refrigeration at the Hershey plant," which will be discussed by A. B. Snavely, engineer in the Hershey organization.

One change has been made in the Monday technical session, which will include a variety of timely subjects. H. G. Tanner, A. F. Benning, and W. F. Mathewson of R. & H. Chemicals will present "Thermodynamic Properties of Methyl Chloride," instead of the paper on another phase of that subject originally scheduled from E. H. McGovern.

Opening the Monday session, D. D. Wile of Savage Arms Corp. will present a paper on "A Portable Calorimeter for Small Compressors," and Charles A. Peters of the U. S. Department of the Interior will follow with a discussion of air-conditioning installations in government buildings in Washington, D. C.

Leon Buehler, Jr. of Frick Co. and Louis De Markus of Louis De Markus Co., Pittsburgh, will give a paper on the "Handling of Brewery Fermentation Gas." George Hulse, A.S.R.E. vice president, will chairman the session.

Interesting new developments in refrigerated transport will feature the Tuesday morning technical session, at which Chester Lichtenberg, vice president, will be chairman.

H. M. Harrington and L. M. S. Cooper of General Electric will present a detailed report on "Refrigerated Truck Bodies for Ice Cream Delivery," and O. C. Walker of the Canadian Pacific Railway will describe "Overhead Bunkers for Refrigerator Cars."

A paper by Dr. F. C. Lindvall of California Institute of Technology on "Forced Air Circulation for Refrigerator Cars" will be presented, and the session will close with a study of "Bus Air Conditioning" prepared by A. J. Mallinckrodt and Lars Hanson of Carrier Corp.

Additional feature of the technical program is a conference on piping practice arranged for the afternoon of May 23, at which A. H. Baer will be chairman.

Advance registration for the meeting will open on Sunday, May 21 in the Hotel Hershey, and meetings of the standards, general technical, program, and educational committees will be held that afternoon. Members of the Philadelphia section will give a reception and cocktail party Sunday for early arrivals, and an informal party will be held in the hotel that night, featuring a quiz contest of the "Information, Please" sort.

Motor trip for women guests has been arranged for Monday morning, and a bridge party will be held that afternoon. Monday night the convention will stage a dinner and dance in the hotel. Golf matches will be played Sunday and Monday, and an effort will be made to complete the tournament in time for presentation of prizes at the Monday night dinner.

Tennis courts, bridle paths, and swimming pools afford guests other recreational facilities.

Entertainment committee for the meeting is chairmanned by C. R. Logan, and has as members A. B. Snavely, George E. Hulse, Lee R. Smith, R. E. Townsend, J. G. Bergdoll, Jr., W. H. Aubrey, and George I. Boone. On the special Philadelphia entertainment committee are H. M. Roberts, A. B. Chamberlain, R. B. Davis, A. H. Holcombe, and Cyril Leech. Mrs. Logan, Mrs. Snavely, and Mrs. David L. Fiske are on the women's entertainment committee.

Westinghouse Names Lippman E. Springfield Manager

SPRINGFIELD, Mass.—William O. Lippman has been named works manager of the East Springfield plant of Westinghouse Electric & Mfg. Co.

Mr. Lippman has been with Westinghouse since 1918. In 1935 he was appointed superintendent of industrial relations, and in 1936, became superintendent of the fan department, and later of the air-conditioning department.

Illinois Utility Group To Invite Complaints On 'Unfair Methods'

(Concluded from Page 1, Column 2)

Chicago; C. G. Bennett, Public Service Co. of Northern Illinois, Chicago; E. J. Bogan, Central Illinois Light Co., Peoria; A. P. Lewis, Central Illinois Electric & Gas Co., Rockford; B. L. Palm, Central Illinois Public Service Co., Springfield; R. F. Palmblade, Illinois-Iowa Power Co., Champaign.

The Illinois federation is urging dealers to direct any "well-substantiated complaints" to Mr. Freeman as chairman, or to any other committee members, or to itself. Formation of the committee, it believes, will do much to promote closer relations between the utilities and department, furniture, hardware, radio and appliance stores, and others handling this type of merchandise.

CLASSIFIED ADVERTISING

RATES: Fifty words or less in 6-point light-face type only, one insertion, $2.00, additional words, four cents each. Three consecutive insertions $5.00, additional words ten cents each.

PAYMENT in advance is required for advertising in this column.

REPLIES to advertisements with Box No. should be addressed to Air Conditioning & Refrigeration News, 5229 Cass Ave., Detroit, Mich.

POSITIONS AVAILABLE

STOKER SALES Supervisor. A large, well-financed Iron Fireman dealer wants an experienced stoker salesman to supervise activities of salesmen. Must be capable of hiring, training, and directing men and have proved sales ability. Salary and commission. Write in confidence giving past record and experience. Interviews will be arranged for those qualified. ODIN THOMAS, Sales Personnel Manager, IRON FIREMAN MFG. CO., 3261 West 106th Street, Cleveland, Ohio.

POSITIONS WANTED

YOUNG SERVICE Engineer, 23 years old, desires position with chance for advancement. R.A.C.I. graduate. Six years' experience in commercial refrigeration at servicing, installing, selling and estimating. Can handle any type machine. Ammonia machines a specialty. Also two years' experience as manager of small service business. Can furnish car and tools. Willing to travel anywhere. Would prefer western coast. Box 1150, Air Conditioning & Refrigeration News.

ENGINEERING SERVICE

CONSULTING ENGINEER. Refrigeration, heating and air conditioning. DELOS P. HEATH, Post Office Box 1473, Detroit, Mich.

FRANCHISES AVAILABLE

COMMERCIAL LINE refrigerator display cases, walk-in coolers, and refrigerators; also direct draw, mechanically-cooled beer coolers. Sell with Ehrlich compressors or with any other make. Attractive discounts, also financing arrangements to help sell. 70 years in business. Write for full information. EHRLICH REFRIGERATOR MFG. CO., St. Joseph, Mo.

EQUIPMENT FOR SALE

250 BRAND NEW Frigidaire compressors in original cartons, suitable for ¼ and ⅓ H.P. highsides. Specifications: Frigidaire part No. 1125-312, twin cylinder complete with flywheel; bore—1½", stroke—17/16". Will sell entire lot or substantial portion, but will not sell in single lots. REFRIGERATOR CORPORATION OF AMERICA, 390 Fourth Ave., New York City.

REPAIR SERVICE

DOMESTIC CONTROLS repaired: Ranco pencil $1.75, Ranco box $2.00, General Electric $2.00, Tag $2.00, Cutler-Hammer $2.00, Penn $2.00, Bishop Babcock $2.50, Majestic $2.50, Penn magnetic $2.50, G. E. Frigidaire $2.50. In business over 20 years. Our name is our guarantee. UNITED SPEEDOMETER REPAIR CO., INC., 342 West 70th Street, New York City.

MAJESTIC, GRUNOW, General Electric and Westinghouse rebuilding. World's largest rebuilders. Prices $30.00 with 18 months' guaranty. Parts for Majestics and Grunows. GE floats $2.95. Westinghouse flapper valves $1.00. ⅛ H.P. Majestic capacitor motors $3.75. Write for catalog. G & G GENUINE MAJESTIC REFRIGERATOR AND RADIO PARTS SERVICE, 5801 Dickens, Chicago.

CONTROL REPAIR service. Your controls repaired by expert mechanics, with special precision equipment. Supervised by graduate engineers. We stress perfection and dependability before price. One year guarantee on domestic controls. Any bellows operated device repaired. HALECTRIC LABORATORY, 1793 Lakeview Road, Cleveland, Ohio.

PATENTS

HAVE YOUR patent work done by a specialist. I have had more than 25 years' experience in refrigeration engineering. Prompt searches and reports. Reasonable fees. H. R. VAN DEVENTER (ASRE), Patent Attorney, 342 Madison Avenue, New York City.

THE BUYER'S GUIDE

53 YEARS OF SERVICE 1886 — 1939
PERCIVAL Line meets EVERY NEED!
Includes Coolers, Reach-In Refrigerators, Top Type, Double Duty, Delicatessen, Dairy and Produce Display Cases and Percival Condensing Units.
Quality built; corkboard insulated; porcelain clad; beautifully streamlined. Coiling system is second to none.
Write for attractive prices, literature and Distributor's proposition.
C. L. PERCIVAL CO.
DES MOINES, IOWA

COMPARE! Gilmer Guarantees You over 41% clear profit on the famous 35-R Assortment of Gilmer Refrigerator Belts

Best-sellers for all the most popular makes. *Gilmer Display Bar (or 25 Gilmer Display Hooks) included with assortment.* Look on Page 5 of the Gilmer Catalog, "America's Belt Bible," for this fast money-maker.

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Hear 'Em Hiss-S-S-S!
-PRESSURE SEALED- DEHYDRATOR

Flanged shell construction simplifies refilling. Vacuum dried and pressure sealed. Distortion-Proof flange, dispersion tube and dehydrant compression spring. Choice of 5 dehydrants. Complete size range.

TYPE 716

WRITE FOR CATALOG

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STOCKED BY LEADING JOBBERS

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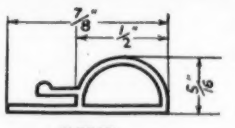
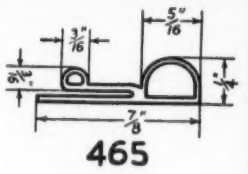


375

Many types in molded and extruded rubber available for replacement use. Ask your jobber for copy of bulletin listing complete line. Manufacturers—let us work from your Blueprints.



465

General Offices
420 North La Salle Street
CHICAGO

ARROW PRODUCTS CORPORATION

Factories
Chicago & Grand Rapids

Gets NEW PROFITS — Solves CIRCULATION PROBLEMS in Coolers—Sells on Demonstration

ACTION-AIR SYSTEM

Nice commissions are yours for selling Action Air System of air circulation in coolers. One easy demonstration shows users its many advantages. It's the quick answer to dead air spots, freezing zones, too much or too little moisture and excessive freezing. Pays for itself by reduced shrinkage and spoilage, by less compressor operation and by electricity savings.

EASY TO SELL, makes new customers, creates repeat business. Get the exclusive sales rights in your territory. Write today for attractive proposition.

THE BROWN CORP., 650 Bellevue Ave., Syracuse, N. Y.

PURO ELECTRIC WATER COOLERS

Thoroughly reinforced all steel attractively finished cabinets.
Complete line of different Models and Capacities.
Write for details and sales prices.

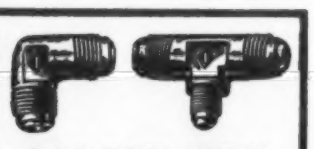
Puro Filter Corporation of America
440 Lafayette Street, New York City Spring 7-1800

A tight system calls for FITTINGS THAT WILL STAY TIGHT

IMPERIAL S. A. E. flared fittings have been setting a mighty fast pace in the air conditioning and refrigeration field . . . and their rapid acceptance by installation and service men is based on *results*. Imperial fittings are tight when the job is finished and they *stay* tight.

Write for catalog covering complete listing of sizes and prices.

IMPERIAL BRASS MFG. CO., 565 S. Racine Ave., Chicago



S. A. E. FLARED FITTINGS

Brass forged nuts, tees, elbows and crosses — will not crack. Heavier and stronger than standard—non-porous—no seepage or season cracking. Tees and elbows have flats for wrench.

IMPERIAL Fittings ORDER FROM YOUR JOBBER

VALVES · TOOLS · CHARGING LINES · FLOATS · DEHYDRATORS · STRAINERS

THE COLD CANVASS

By B. T. Umor

Honeymoon Patrol

Troubles encountered by a young bridegroom in proving his title to one of the essentials of modern housekeeping, as reported in a recent issue of Printers' Ink magazine:

"A young Missouri farmer, living near the state line, was engaged to a girl in an adjoining state, not far from the border. The morning of the wedding he received a telegram from a relative to stop at the freight station in town and pick up a wedding gift. His only car was a pick-up truck and he dutifully called at the depot for the gift, which turned out to be a big electric refrigerator. He loaded the gift on his truck and, not having time to return to his farm, set out for the bride's home. These things happened:

"1. As he drove by the port-of-entry just across the state line, he was challenged by the guard.

"2. He failed to stop, but a pistol shot at his rear tire brought him up.

"3. The official laughed at his story about being on the way to a wedding. It was obvious that here was a salesman trying to deliver merchandise into the state without paying the highway tax. Even use of a phone was refused until the guard finished giving him the third degree.

"4. Finally a call to the bride's home convinced the guard and our hero proceeded on his way.

"5. The wedding over, he set out for home with his bride beside him. This time he approached the port-of-entry post with caution and, sure enough, was halted.

"6. A different guard was on duty, of course, and it took more arguing and another phone call before the honeymoon could continue."

* * *

A Big Man In the Industry

That picture of John H. Hunter, heralding him as the "world's largest Frigidaire dealer" brought in counter claims of record avoirdupois.

Charlie Lorenz, appliance manager of King's Furniture Co. in San Antonio, puts forth his service man, Clinton A. Posey, as the weightiest subject in the refrigeration world. "Colossal Clint" stretches skyward for 6 feet 7½ inches and tips the beam at 366 pounds.

Picture of ponderous Posey holding a refrigerator in each hand at arm's length while balancing an ice tray on his chin was promised as soon as he clears up a charley horse he acquired while doing deep knee bends with four compressors dangling from his brawny arms.

* * *

"What the country needs, if it is going to whip unemployment, is more of these labor-saving devices that require the weekly attention of a service man," says the Detroit News.

Plan Is Submitted For Reorganization Of Grunow Firm

(Concluded from Page 1, Column 1)

company. As an inducing element, William C. Grunow, General Household Utilities chairman, in consideration of the acceptance of this plan by at least 75% of the unsecured creditors, has undertaken to guarantee the subscription of at least $400,000 of stock of the company junior to the prior preferred stock, to enable it to commence operation of its business.

STOCK PRIORITY

Priority to be contained in the preferred stock, among others, will include that:

1. In the event of a liquidation, the prior preferred stockholders shall be entitled to a priority to the extent of the par or stated value of their stock before any other classes of stock which may be issued or outstanding may participate.

2. No dividends shall be paid on any other stock until a dividend of not less than 5% of the par or stated value of the prior preferred stock shall have been paid in any fiscal year, which dividend shall be non-cumulative.

3. The company shall have the right to redeem the stock on the following basis: on or before Nov. 1, 1940, 75 cents on the dollar; on or before that date of 1941, 80 cents on the dollar; 1942, 85 cents; 1943, 90 cents; 1944, 95 cents; 1945, $1; 1946, $1.05; and 1947 or thereafter, $1.10 on the dollar.

The company reserves the right to redeem all or part of the stock in any fiscal year, and if only part of the stock is retired, this shall be done by lot.

REFRIGERATORS ONLY

The company will continue to engage in the electric refrigeration business exclusively. After a comprehensive survey of the product, the facilities, the cost, and the overhead, Sanderson & Porter, a firm of independent industrial engineers, have given a favorable report on the proposed operations of the company, the creditors' committee reports.

Included in the report to creditors is a balance sheet of the company as of March 31, 1939, with a pro forma statement indicating a projected recital as, if, and when the company shall be refinanced. Balance sheet shows liability of $480,319.50 entitled to priority over unsecured creditors. This includes an RFC loan, wage claims, federal and state taxes and workmen's compensation, and money due the collector of internal revenue.

SEEK LOAN EXTENSION

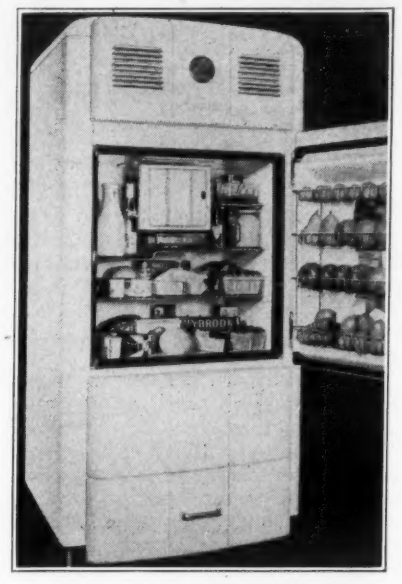
With the aid of the unsecured creditors, the committee reports, the company feels it can obtain an extension on its RFC loan. A substantial number of the wage claimants (which do not include any officers of the company) have agreed to accept 20% of their claims in cash, and to stand in the same position as the unsecured creditors as to the balance of their claims, provided a reorganization plan becomes effective.

Mr. Grunow, Harry Alter, president, and directors of the company have served without pay since February, 1938, the committee reports. Steps are now being taken to effect adjustments with various taxing bodies.

To facilitate reorganization and speed things up as much as possible, the creditors' committee has asked creditors to sign an authorization directing it to continue negotiations in an effort to find a suitable plan of organization.

Within a short time, it is expected, these negotiations will be sufficiently concluded so that the corporation will be in a position to register its securities with the SEC and with such other state authorities as may be necessary, so that a formal plan can be forwarded to creditors.

Kerosene-Operated



'Flame-Freeze' Refrigerator.

* * *

Low Running Cost Claimed For New Crosley Unit

(Concluded from Page 1, Column 1)

kerosene necessary, and also whether one or two "heats" are required per day. This indicator is calibrated to give the optimum performance characteristic for the varying room temperatures. Burning time, a function of room temperatures and load conditions, may vary from one hour to 1¾ hours between minimum and maximum conditions.

One heating each day is all that is required in mild temperatures, but two heatings may be necessary in summertime. Amount of fuel required depends upon room temperature, the amount of ice cubes used, and quantity of food in the unit.

Ease of operation is claimed for the new unit. Fuel jar is handy in the front of the sliding drawer at the bottom of the cabinet. Compressor is hermetically sealed.

'Press, Jr.' Minicam Sells For $7.95

CINCINNATI—This "candid camera" bug seems to be contagious among manufacturers as well as among consumers. Latest entry into the mad scramble for photographic profits is the increasingly versatile Crosley Corp., which has added to its fast growing list of products a 35 mm. camera fitted with reflector and socket for synchronized flash bulb.

This new miniature has been christened "Press, Jr." It is priced at $7.95 complete.

Introduction of this camera closely follows that of the new Crosley automobile, which also is in the "midget" class. Hoping to avoid the complications resulting from the high mortality rate among regular automobile dealers, Crosley Corp. is laying the problem of selling the Crosley car squarely in the laps of selected distributors and dealers in its own merchandising organization.

Several established automobile dealers are also expected to be invited to handle this new product, but will not in any case be allowed to specialize in it alone.

Bard Heads Norge's Commercial Sales

MALCOLM T. BARD

* * *

(Concluded from Page 1, Column 4)

From 1929 to 1937, he was with General Electric's appliance and merchandise department, specializing on organizing commercial refrigeration distributors, and later was manager of G-E's disposal unit sales.

Mr. Toonder has been a consulting and design engineer in the commercial and air-conditioning field since 1921, and has been associated with Norge since January, 1937. His experience includes work with Clarage Fan Co.; Smith, Hinchman & Grylls, Detroit consulting engineers; Carrier Corp.; and Kelvinator.

Anaconda Copper
Refrigeration Tubes
Dependable!

THE AMERICAN BRASS CO
FRENCH SMALL TUBE BRANCH
General Offices Waterbury, Conn.

Refrigerated APPLE STORAGE with A-P Valves . .

Successful Apple Storage demands constant temperatures, and the most accurate of Control Equipment. Too great a fluctuation means loss of quality and appearance. So, for Apple Storage, as well as for all types of Refrigeration and Air Conditioning, A-P Valves are safest.

Supersensitivity to minute temperature differences — plus easy installation, easy adjustment, and leakproof, service-free efficiency—places A-P Thermostatic Expansion Valves in No. 1 choice with the Installing Engineer, Service Engineer — and your customer, the user.

AUTOMATIC PRODUCTS COMPANY
2450 NORTH THIRTY — SECOND STREET
MILWAUKEE WISCONSIN

Export Department
100 Varick Street, New York City

AIR CONDITIONING AND REFRIGERATION
AVERY ENGINEERING COMPANY
2341 CARNEGIE AVENUE
CLEVELAND

April 26, 1938.

Automatic Products Company,
Union Building
Cleveland, Ohio

Gentlemen: Attention: Mr. Anderson

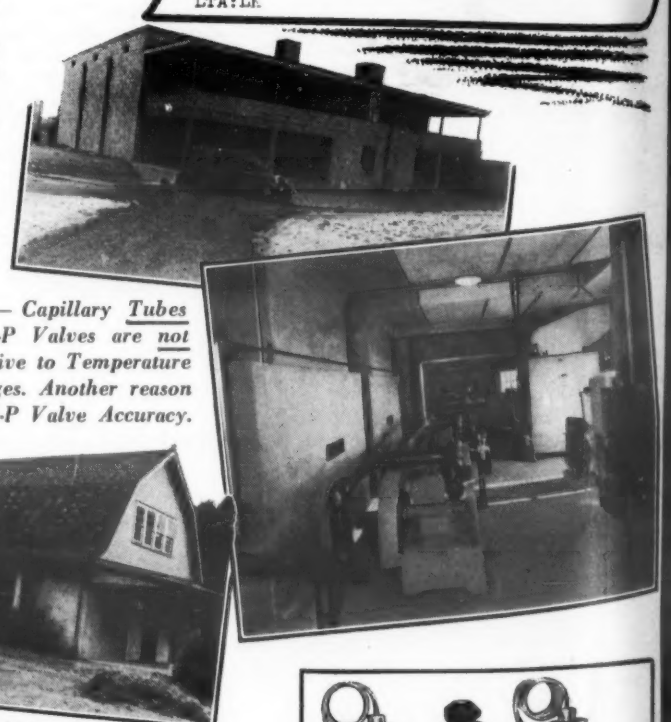
The picture we furnished you showed a few of our jobs on which we have used Automatic Products valves. We have had good service from these valves and good service from your office and trust that we can continue to do business on a mutually satisfactory basis.

Very truly yours,
AVERY ENGINEERING COMPANY

By Lte T. Ong
President

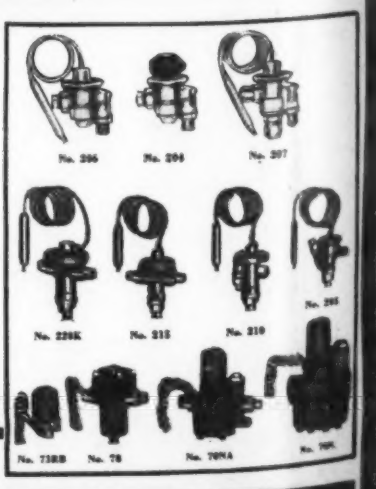
LTA:LK

Note — Capillary Tubes on A-P Valves are not Sensitive to Temperature Changes. Another reason for A-P Valve Accuracy.



● REFRIGERATION PARTS JOBBERS WHO RECOGNIZE QUALITY . . STOCK A-P CONTROLS

Installations . . . .
Modern Apple Storage Plants
Refrigeration Unit . . .
Carbondale
Sold and Installed by . . .
Avery Engineering Company
Cleveland, Ohio
Valves . . . A-P
Purchased Through . . .
The Harry Alter Co.



DEPENDABLE
THE BYWORD FOR A-P VALVES

The Market is Ready for GR ROOM CONDITIONERS!

Lipman AUTOMATIC REFRIGERATION GR AIR CONDITIONING

As personal comfort equipment for home or office or as a profit-building appliance for any small business establishment . . . . the GR ROOM CONDITIONER offers an unusual sales opportunity and is a remarkably efficient piece of equipment for the user. Get details. Write:

GENERAL REFRIGERATION CORPORATION
Dept. AC-4 Beloit, Wis., U. S. A.

TECHNOLOGY DEPT.

Around the World
WITH A CANDID CAMERA

By George F. Taubeneck

REFRIGERATION AND AIR CONDITIONING

in

India, Egypt, Spain, France, Italy, Hungary, Switzerland, Netherlands, Sweden, and Germany (Austria)

INTRODUCTION

AIR conditioning and refrigeration have girdled the globe. In the last two decades, refrigeration has become a virtual necessity for the home, for the commercial storage and transportation of foods, and for many industrial processes. Likewise, air conditioning for human comfort and for industrial purposes has become known and desired in every continent.

In an attempt to learn something of the needs and problems of those who manufacture and sell refrigeration and air-conditioning equipment in many lands, the editor of AIR CONDITIONING & REFRIGERATION NEWS has toured the world, visiting and interviewing subscribers.

Reports on these visits to India, Egypt, Spain, France, Italy, Hungary, Switzerland, the Netherlands, Sweden, and Germany (including Austria) are reprinted in this pamphlet. Other countries on which the editor has reported in the editorial columns of AIR CONDITIONING & REFRIGERATION NEWS include Australia, New Zealand, Burma, Arabia, Straits Settlements and Malay States, Java, Fiji, and Samoa.

COPYRIGHT, 1938, by Business News Publishing Co. All rights reserved. Originally published (and copyrighted) in the weekly issues of AIR CONDITIONING & REFRIGERATION NEWS (formerly Electric Refrigeration News).

Subscribers in the active refrigeration markets of South America and South Africa have frequently written about their experiences and work to the NEWS, as have subscribers in practically all of the European nations. These letters, and the accompanying pictures, have been published in the NEWS from time to time.

Naturally it is difficult to keep close contact with developments all over the world at the same time, and so the NEWS depends upon its subscribers to maintain the lines of communication, so as to keep readers everywhere informed on the conditions which exist in individual nations.

This pamphlet of reprinted articles and pictures is published in the hope that it will encourage readers in every country to send similar information to the NEWS. The trip was made in an attempt to get first-hand information about the countries visited. But that, of course, was only a beginning. Because of the elements of time and cost involved, it is practically impossible to keep in close personal contact with all the fields into which air conditioning and refrigeration have extended; and so the NEWS hopes that, in addition to regular letters from those already contacted, subscribers in countries we have not had the opportunity to visit will also cooperate by exchanging experiences with other readers through the editorial columns of the NEWS.

Even though the problems may vary in each country, the thinking and experiences of subscribers in one place may prove most helpful to readers in another place. By exchanging ideas, everyone gains.

It is the aim of AIR CONDITIONING & REFRIGERATION NEWS to expand its services to meet the needs of subscribers everywhere. At present the Master Service Manuals on Commercial Refrigeration, published by the NEWS in English, are being translated into French; and eventually, it is hoped, editions of these manuals may be published in Spanish and other languages. Every effort is being made to publish news of refrigeration and air-conditioning activities all over the world in the weekly columns of the NEWS.

To those who might not be acquainted with AIR CONDITIONING & REFRIGERATION NEWS, the weekly newspaper of the industry, it should be noted that copies of the NEWS and of the Refrigeration & Air Conditioning Directory may be seen in offices of the United States Department of Commerce all over the world. A sample copy of the NEWS may be had by writing to the Business News Publishing Co., 5229 Cass Ave., Detroit, Michigan, United States of America.

BUSINESS NEWS PUBLISHING CO.
5229 Cass Avenue, Detroit, Mich. U.S.A.
REFRIGERATION AND AIR CONDITIONING PUBLICATIONS

....INDIA

Refrigeration & Air Conditioning

Merchandising is all bound up with religion in India. To sell refrigerators one must know the taboos and customs, which form a bizarre pattern of human conduct, interwoven in frightful colors.

Only a few American refrigeration and air-conditioning firms have gained a foothold in India as a result of this vast country's perverse psychology, although no land in the world needs refrigeration and air conditioning so much.

India's population is roughly three times that of the United States, yet the extreme poverty of the masses does not offer a favorable situation for large-scale distribution of American products. There *is* a market, though, and this chapter tells about it.

Calcutta

Frigidaire Monopoly

Frigidaire seems to have the refrigeration situation pretty well under control in Calcutta. As a matter of fact, Refrigerators, Ltd., Frigidaire distributor in that city, had a virtual monopoly of the business until quite recently.

Kelvinator has begun to cut in a bit, and so has HMV. But Frigidaire is still well in the lead.

Refrigerators, Ltd., first took on the Frigidaire line in 1925. Total sales that initial year numbered 12. In 1936 they topped 600. (It might be noted, apropos of something, that this firm pays for *two* subscriptions to AIR CONDITIONING & REFRIGERATION NEWS.)

In all, this concern estimates that in the Calcutta area 5,000 household refrigerators, 600 commercial jobs, and six *complete* air-conditioning installations have been sold. Frigidaire has sold far more than all other makes combined.

E. G. BROMBY is managing director, G. S. MILNER director, and P. L. MUKHERJEE the No. 1 salesman of this concern. Four other salesmen scour Calcutta for business.

An associate company of Refrigerators, Ltd., Allen Berry, Ltd., has branches in Lucknow and Dibrugarh. Through these branches and their subagents Frigidaires are sold in those territories.

Milner himself conducts the retail operation in Delhi, with sub-dealers. In addition to these, 14 independent dealers have been awarded the Frigidaire franchise. Altogether, Refrigerators, Ltd., has 32 retail outlets.

* * *

Sell on Service

Having enjoyed such complete control of the business for so long, Refrigerators Ltd., treats refrigeration as a *public utility.*

It is *refrigeration* they are selling, not refrigerators; and their chief selling weapon is their reputation for maintaining good *service.*

As a result of this policy, Refrigerators, Ltd., is able to boast that *every Frigidaire sold in Calcutta is still in use.*

To maintain the big service staff, including 30 men with motorcycles, the well-equipped shop, and the extensive store of parts—on which they have established, and stake, their reputation—Refrigerators, Ltd., charges good prices for its service jobs, and the highest prices for its refrigerators.

A 5-cu. ft. Frigidaire costs 750 rupees retail in Calcutta, or about $250. The 5 and 6-cu. ft. boxes are the best sellers.

Frigidaire sells on a one year guarantee in Calcutta, and nobody seems to have been able to implant the notion that longer guarantees are of value in Calcutta.

This long tenancy of the dominant position in Calcutta refrigerationdom has given Refrigerators, Ltd. the opportunity to establish a number of principles as being pretty much incontrovertible, such as:

"The open type, reciprocating compressor is the only satisfactory method of producing refrigeration."

Mr. Milner was crossed up, however, when the Frigidaire factory began putting out a rotary compressor. His reaction to this heresy was exactly the same as that of Mr. Hebditch of Magnet House in Singapore when Westinghouse came out with a bottom-mounted unit: he refuses to sell the innovation.

"When I've succeeded in convincing the buying public that the rotary compressor is inefficient, how can I turn around and sell one?" he asks.

A. J. BOYD of General Motors India (who, unfortunately for my story, was not in the country at the time of my visit) managed to sell a number of these rotary compressor Frigidaires to Mr. Milner a couple of years ago, but they have never been taken out of the packing cases.

Mr. Milner uses them as an object lesson and a sales argument. When a prospect seems to show interest in an HMV, he motions:

"Come with me. See these? Here are thousands of rupees tied up in refrigerators. Our factory equipped these with rotary compressors and we had to buy them. But we have refused to palm them off on our customers. We take the loss, rather than incur the risk of losing good will."

Mr. Milner admits that the weight of this argument in closing sales has more than repaid Refrigerators, Ltd. for the investment in uncrated models.

* * *

Expensive Nightcap

Principal source of prospects lies among ice users, the concern finds. Some newspaper advertising is done, but the company depends chiefly upon word-of-mouth promotion by users.

Again to foster the idea that if you buy a Frigidaire, Refrigerators, Ltd., will give you unwavering *service;* the advertising fund is dipped into to pay for *free service* wherever and whenever the company thinks it advisable. This "investment," it is claimed, results in extraordinarily high returns in customer good will and word-of-mouth promotion.

To sell refrigeration to Indians requires almost insufferably patient education. For centuries their eating has been wound up in religious beliefs and practices. Among these is a pious horror of "stale" food. Using leftovers would be sinful.

Vegetables and fruit are eaten shortly after picking. When meat is eaten, which is seldom, it must be consumed before sundown of the day on which slaughtering and butchering took place.

To people with unshakable religious beliefs, the only sales appeal for a refrigerator is pride of possession.

Mr. Milner stumbled on to this formula one day when an old Indian, unkempt, and wearing little but a dirty turban and a diaper-like arrangement came into the store. The staff paid no attention to him. Finally the old Indian beckoned Mr. Milner over to him.

"How much?" he asked, pointing to an 18-cu. ft. deluxe Frigidaire.

Mr. Milner smiled indulgently and replied: "Three thousand rupees."

The venerable Indian calmly pulled a 10,000 rupee note out of his diaper, handed it to Mr. Milner, and uttered the Hindustani equivalent of:

"Wrap it up."

On investigation it turned out that the old Indian was a landlord out in the provinces, and that he wanted the refrigerator solely so that he could have a glass of cold water before retiring!

All the excess capacity was merely to impress his friends.

* * *

Air Conditioning

Messrs. Bromby and Milner are both convinced that air conditioning should have a great future in India. And I add my personal observation, right here and now, that if there's any place in the world which really *needs* refrigeration, it's Calcutta. (Temperature the day I arrived was 106° F.)

Refrigerators, Ltd. is most proud of its installation in the government Test House, where all sorts of articles are subjected to tests for quality. Controllable temperature and humidity are most important in this work, and that's just what Refrigerators, Ltd., has provided.

Another installation of which Messrs. Bromby and Milner are proud is that of the offices of the Tata Iron and Steel Co., Ltd., in Jashedpur. This concern, the biggest of its kind in India, employs 25,000 workers. Water coolers have also been purchased by this firm.

* * *

Commercial Progress

Because of the religious bans on "stale" food, noted previously, demand for refrigeration equipment from food markets is almost nil. But patient education has gained some business.

Of course, those food retailing and food serving establishments which serve Europeans and Anglo-Indians (for some reason, the half-castes resent the term Eurasians, so it is seldom applied in India) are good prospects.

Refrigerators, Ltd., manufactures its own commercial coils and cabinets.

As a side light on the special refrigeration needs of India, and as a hint to manufacturers who have not been able to satisfy Indian requirements, let's take a look at some of Refrigerators, Ltd.'s equipment.

Bottle coolers made by this company, which more nearly approximate in appearance the American equivalent than any other equipment, have cabinets of thoroughly seasoned teakwood, beautifully paneled on the outside, and finished in natural color. Compressed corkboard, three inches thick, and sealed in place with hydrolene to make it waterproof, is used for insulation.

The lining is of ½ inch tongued and grooved boards covered with heavy gauge zinc sheet. Service lids are fitted, each giving access to one compartment, and insulated with two inches of pure compressed corkboard, and lined with zinc sheet. All hardware is made of heavily nickel-plated brass, of rugged construction to withstand roughest use, and to insure air tight lids.

A cooling coil of surplus capacity is fitted in the cooler and is operated by a remote compressor. The unit maintains a temperature of 40°.

A 200-bottle cooler is 53 inches in length, 32 inches wide, and 33 inches high, has four compartments, and uses a ¼-hp. air-cooled compressor.

For the small club or restaurant where both food storage and bottle cooling is required, the company has put out a combination cooler. It holds 100 bottles, and includes 5 cu. ft. of food storage space.

In the high temperatures and humidities of India it has been necessary for Refrigerators, Ltd., to put out specialized dark room equipment for the successful processing of x-ray photographs. This equipment consists of a refrigerated tank system developing plant, a film drying cupboard, and in some cases, a specially designed work table and light lock.

A Frigidaire compressor holds the refrigerated tank between 65° and 68° F. Hard rubber developing, fixing, and washing tanks stand in the main refrigerated tank.

This tank cooler, Mr. Milner says, is furnished either with or without running water at 68° F. and 20 g.p.h., and for either 15x12 films, or 17x14.

The work table, which is made up in polished teakwood, contains special tilting bin and a drying cupboard can be built in below the table, out of the way.

Thirty to 40 minutes dries as many as 24 films up to 17x14 size in the film drying cupboard which is dried by an exhaust fan drawing air over a heater and blowing it over the hanging films. The films remain in their hangers and are placed on sliding frames which carry 12 films each into the cabinet.

One of the x-ray developing tanks was installed for Dr. G. Galstaun, consulting radiologist at the Medical College Hospital in Calcutta.

For commercial cooler portability, the company has designed an interesting type of cold storage room to meet Indian conditions, which is called a sectional cooler. This can be installed on rented premises, thus overcoming the objection which must be met so often there that a built-in cooler would be a fixture and would have to be left behind in the event of removal.

* * *

Special Applications

Among the company's most interesting commercial coolers is a 250-cu. ft. sectional cooler installed in the regimental kitchen of the First Bn. King's Royal Rifles in Calcutta.

Mr. Milner pointed to a 70-cu. ft. cooler installed several years ago for Boots Pure Drug Co. as an example of their work in the storage of vaccines and serums. Bengal Chemical & Pharmaceutical Works, Ltd., also has cold storage equipment of 2,000 cu. ft. for vaccine and serum storage.

Other typical installations which he named included an installation at Belvedere, the Viceroy's Camp in Calcutta, which provides for 200 cu. ft. of cold storage space; Viceroy's house, with 80 cu. ft. of cold storage space; The Imperial Delhi Gymkhana Club with 75 cu. ft.; Bengal Immunity Co., Ltd., Calcutta, which has 2,000 cu. ft.; Bengal Veterinary College, with 600 cu. ft.; and the Croner House, Russell St., Calcutta, with 250 cu. ft.

Tank type coolers, Mr. Milner said, readily adapt themselves to most conditions, so Refrigerators, Ltd., manufactures them exclusively in sizes from a 50 gal.-a-day tank to many thousands.

* * *

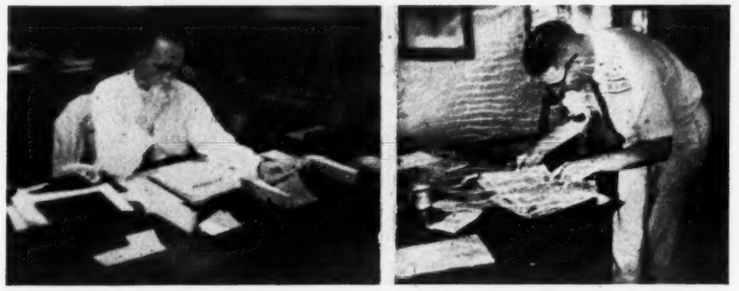
Odd Water Coolers

You would have to see the water coolers to appreciate the difference in appearance between the sleek, metal, stream-lined ones to which we are accustomed, and the box-shaped, polished teakwood cases put out by this Calcutta company. They use cork for insulation, and seal it in place with hydrolene to make it waterproof. If the customer requests it, the coolers are paneled in steel coated plymar at a small extra charge.

One small cooler, box-shape with tiny spigot, is mounted on brackets in what is called the Saturday Club there. It has overall dimensions of 2 ft. 5 inches x 2 ft. 5 inches x 2 ft. 5 inches; a larger one varies the first dimensions with 4 ft. 2 inches. On some occasions at the Club, the smaller of these two has been used for as many as 400 to 500 glasses of water within two or three hours, the secretary of the club reports.

The messing officer there has now caused its removal to Rangoon (a point in favor of this sectional construction) and the Devonshire Regi-

Leaders in their Fields



(Left) G. S. Milner, director of Refrigerators, Ltd., Frigidaire distributor and leading outlet in Calcutta. (Right) C. T. Hooper of Air Conditioning Corp., Ltd., Carrier dealer, would appear to be in the midst of one of Calcutta's terrific "heat waves," but it's really just a flaw in the picture.

ment which took over the K.R.R. in Calcutta has put in a similar cooler for themselves.

Of course, Refrigerators, Ltd., also installs built-in rooms like the one in the main kitchen at Firpo, Ltd., largest restaurateurs in the east, which has been in operation four years. Mr. Firpo has installed more than 30,000 rupees of Frigidaire equipment in his restaurant.

Messrs. Bird & Co., the offices of the Bengal Telephone Co., and the National Insurance Co., as well as the Metro Cinema Calcutta have coolers sold to them by Refrigerators, Ltd., of the larger type described. These are box-like sturdy looking structures mounted on a wooden-leg base with the compressor in plain sight at the base of the unit.

A less beautiful, but highly efficient cold water plant has been doing service in the offices of the Calcutta Electric Supply Corp. With a storage capacity of 250 gals., it supplies water daily to a staff of more than 400 persons. During the hotter days, they tell me, pails of cold water have been carried away from this cooler for bathing purposes.

Sales of refrigerating equipment for wholesale and retail stores have increased remarkably in the last few years, Mr. Milner states. This company builds display cases in lengths of 6 ft., 8 ft., 10 ft., and 12 ft., and has specialized also in making up special jobs to suit the customer's requirements.

* * *

Kelvinators for Rent

B. H. SMITH & CO., Calcutta distribution agency for Kelvinator, operates on a unique principle. Mr. Griffin, who manages the refrigeration department of this firm, *rents* Kelvinators for 15 rupees a month.

Out of Calcutta's 1,500,000 population, there are probably no more than 6,000 Europeans. These people are here to "make money and clear out."

Most of them come for 3, 5, or 7 years on a "covenant" (contract), at the end of which time they go home on leave, and frequently not to return. Hence there's rather a general feeling of unsettledness, of insecurity, among this class of people. To them, Mr. Griffin reasons, the rental idea should appeal.

* * *

Air Conditioning Corporation, Ltd.

Two bright and energetic young men who are pioneering air conditioning in India are C. T. HOOPER and WILLIAM W. KING of the Air Conditioning Corp., Ltd., 8, Esplanade Mansions, Calcutta.

Although the head office is in Calcutta, this firm maintains a branch at the Exchange, Alipur Road, Delhi; and does business all over India.

Only "big stuff" really interests Messrs Hooper and King. So what they go after is the industrial type of installation, of which they have made more than 30.

Following is the list of air-conditioning installations made within the last year by Air Conditioning Corp.

Irwin hospital, New Delhi; F. Cornaglia, Ltd., Bombay; *Times of India*, Bombay; Tata Iron & Steel Co., Ltd., Jamshedpur; Metal Box Co. of India, Ltd., Calcutta; Metro Theater, Calcutta; Sir U. N. Brahmachari, Calcutta; Phillips Electric Co., Ltd., Calcutta; Lac Research Institute, Ranchi; Main Telephone Exchange, Ahmedabad; Ellis Bridge Telephone Exchange, Ahmedabad; Central Telephone Exchange, Karachi; Gardens Telephone Exchange, Karachi; Cantonment Telephone Exchange, Karachi.

Pioneering in India

William W. King, partner in the Air Conditioning Corp., Ltd., which has been a prime factor in Calcutta air conditioning.

They stand ready to do any type of job embracing humidification, dehumidification, cooling, heating, ventilation, refrigeration, drying, forced and induced draft, refuse and fume removal.

Although they have imported material from English, German, and Dutch firms as occasion demanded, most of their equipment has been manufactured by Universal Cooler, for which they are agents.

Mr. Hooper received his early training at the Carrier Corp. in London. He has continued his education in air conditioning, he avers, through the columns of AIR CONDITIONING & REFRIGERATION NEWS.

Largest Installation

Air Conditioning Corp., Ltd.'s largest installation was the cigarette factory recently opened by Carreras, Ltd., Calcutta, for which the air-conditioning firm broke a number of records by supplying the largest refrigerating plant (as a single unit) yet imported into India; by manufacturing, in Calcutta, the whole air-conditioning equipment which is the largest of its kind ever installed in the East; and by getting the system in operation, in spite of its size, within three months from the date of receiving the contract.

The company met a number of difficulties in the installation, Mr. Hooper related. The building was an existing steel frame structure with thin filling brick walls between columns and beams.

Floors were of reinforced concrete supported by steel troughing so that it was impossible to have a centrally located air-conditioning plant from which distributing ducts could connect with various floors.

This they solved by arranging a separate air-conditioning plant on each floor of the factory, from which galvanized steel air ducts convey the conditioned air to the various departments.

Vagaries in the Calcutta climate and the necessity for maintaining constant conditions in all departments both day and night irrespective of the number of persons present, and fluctuations in other sources of heat and moisture gains made an elaborate set of controls necessary.

To maintain the constant temperature of 85° F. at all times of the year, steam heater batteries were fitted to each of the air-conditioning plants, which were supplied with medium pressure steam from two large Cornish type boilers through thermostatically operated diaphragm valves.

Cooling during hot weather is accomplished by refrigerating the water supplied to the spray nozzles of the air-conditioning plants.

A patented sleeve valve refrigerating machine of the vertical multi-cylinder type manufactured by H. J. West is used.

Ammonia is the refrigerant employed, with an initial charge amounting to more than one ton by weight. The hot ammonia gas discharged from the compressor is condensed back into liquid in a multitubular counter current condenser, the latent heat of the condensation being carried away by a constant flow of water approximating to 30,000 g.p.h. and supplied from three tube wells.

* * *

How They Did It

The liquid ammonia drains into a liquid receiver at the base of the condenser whence it flows under pressure to two multitubular evaporators. Here the ammonia is expanded into gas again, and the heat required to bring about this change in state is taken from the water to be cooled for the air-conditioning plants.

An auto-synchronous motor was connected to the compressor in order to correct the power factor for the entire factory. This meant that the compressor capacity could not be varied in the normal way by speed reduction to meet changes in the outside atmospheric conditions.

A unique system of by-passing was therefore installed that permits one or two cylinders of the compressor to idle while the remainder function in the normal manner.

Refrigerating equipment, like the boiler house, is a central station plant serving the various air-conditioning units and is housed in an out building away from the factory.

Calcutta Fan Industry

There's a new local industry in India—the manufacture of fans. It is taking the place of the old Punkah Coolie (who used to have the job of waving a fan on the end of a long pole to keep his master cool and shoo the flies away).

Too old for any form of work, in order to live the Punkah Coolie offered to undertake a task no able bodied man would tolerate.

Electric fans imported into India up to this time have had such high freight and import duty on them that the price was prohibitive for the man of small or even average means.

But in Calcutta and other towns where electricity is now available, the electric fan is gradually finding its way into the homes.

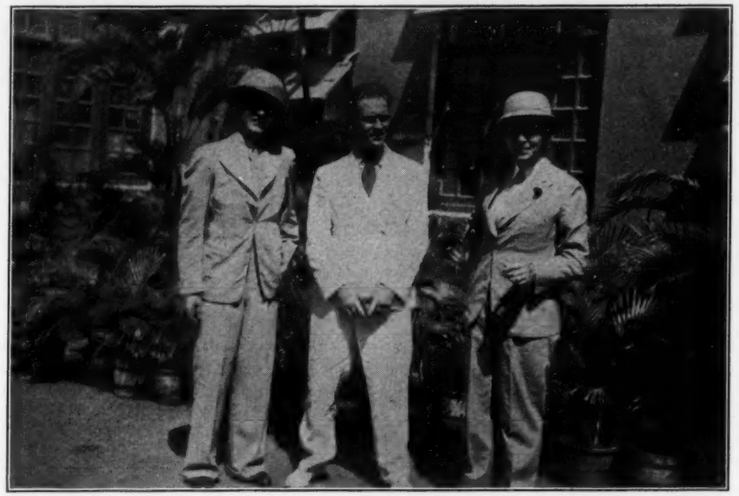
When carefully supervised, the India workman is capable of turning out good work. So with the aid of up-to-date machines, the British India Electric Construction Co., Ltd., and the managing agents, Messrs. Balmer Lawrie & Co., Ltd. have produced a "Biecco" electric fan locally.

Totally enclosed motors, suitable speed regulators, and a white and gold or gold and black finish make the fans comparable to the best looking and smoothest running fans imported.

Electrolux Dealer

Headquarters of Vulcan Trading Co., Electrolux dealership in Bombay. The company is a subsidiary of Swedish Match Co.

The Weary Traveler in India



Outside the Royal Yacht Club of Bombay, India. The author (center) in the company of Mr. Persson (left), manager of Vulcan Trading Co., Electrolux agents in Bombay, and Mr. Sundgren, Swedish Consul and joint general manager of Swedish Match Co., Ltd., and Vulcan Trading Co.

BOMBAY

Comfort At Last

After the rigors of crossing the parched fastnesses of India, Bombay's elegance was soothing indeed. India, to this traveler, was all feast or famine, tops or bottom, luxuriant or frightfully poor.

The most uncomfortable periods of my life were spent in Indian trains; on the other hand, my room at the Taj Mahal hotel in Bombay was probably the finest I have encountered in several consecutive years of living in hotels.

Moreover, the reception accorded me by Bombay refrigeration interests rivaled even that of Australia.

* * *

Electrolux Renews

Perhaps the most attention was paid to me by two firms which are just getting going in the refrigeration business in Bombay: Swedish Match Co. (Electrolux), and Ahmed A. Fazelbhoy (Crosley).

Electrolux went into the India market some years ago with its water-cooled model; but withdrew after it was discovered that the varying conditions of Indian water supply worked a measure of havoc with the Electrolux mechanism.

Now, with the air-cooled job, Electrolux is back on the scene again. Officials at Stockholm, sensing that the Indian market is potentially an important one, have sent their crack export man, C. V. MIDDLETON, to Bombay to organize the business.

Mr. Middleton has specialized in Eastern operations, and is a thoroughly capable and efficient man, who understands the Eastern mind, habits, and customs. He is a student of race psychology as well as being an adept refrigeration engineer, and contributed much to my understanding of India and its special contributions.

As Indian distributor for Electrolux, Mr. Middleton has lined up the Swedish Match Co. of Bombay. Through a subsidiary, the Vulcan Trading Co., this financially powerful organization is now setting up local distribution points throughout the Indian Empire.

J. G. PERSSON of the Vulcan Trading Co., an alert, engaging man still in his late twenties, will head the Electrolux sales organization.

Mr. Persson points out that in addition to the profit possibilities in the venture, his company is most concerned about the success of this new branch of the business through *patriotism* and *loyalty*. Swedish matches and Electrolux refrigerators and vacuum cleaners are probably the best known Swedish products in other nations.

In addition to several discussions with Messrs. Middleton and Persson, I lunched with B. A. THORSTENSON and S. SUNGREN, joint managing directors of the Swedish Match Co. Mr. Thorstenson directs sales activities, while Mr. Sundgren heads engineering and production. The latter is also the Swedish consul in Bombay.

Through the good offices of these gentlemen, I enjoyed the privileges of all three of the leading clubs in Bombay. They even dug up a tennis partner, who beat me quite handily.

* * *

The Fazelbhoy Family

An old concern, but new in refrigeration is AHMED A. FAZELBHOY,

Back of Electrolux

J. G. Persson of Vulcan Trading Co., subsidiary of Swedish Match Co., India Electrolux distributor, and C. V. Middleton, Electrolux export manager and a specialist in eastern operations.

Import and Export. This concern is sole distributor in India for Crosley Radio Corp., U. S. L. Battery Co., Miller Rubber Co., Pioneer Rubber Co., Dunlop Rubber Co., and Arcturus Radio Tube Co.—all American manufacturers—and for the Forma Co. (German), Radium Rubber Co. (German), and the Ucometal Co. (Belgian).

The Fazelbhoy organization has been prominent in the rubber business in India for years. FAZEL FAZELBHOY, a younger brother of Ahmed, assists in the executive management of the firm. He will direct sales of Crosley radios.

Another branch of the family—which is native Indian, and of the Mohammedan faith (Indian merchant princes are generally Mohammedans or Parsees rather than of the Brahmin or Hindu persuasion. This is a most important consideration, as we shall see later)—is dominant in the field of radio and talking pictures in India.

This firm, which is distributor for R. C. A. radios and cinema equipment is interested also in air conditioning, and is studying REFRIGERATION NEWS—both editorial and advertising columns—closely with a view toward getting into this new business in the near future.

M. A. FAZELBHOY of this firm questioned me at length in regard to the American air-conditioning situation; and in return, issued me a pass to his Film City, production center for the flourishing Bombay talking picture industry.

It was worth seeing too. In one block of buildings, Film City has available everything required for the complete production of a picture, from the time the scenario is approved up to the last stage when the film is censored in the company's own theater.

Equipment capable of producing a picture comparable to any European or American picture is this company's boast. Two sound stages are available, one with room for six sets, and the other, claimed to be the highest and largest studio in India, large enough for any setting to be erected.

Its recording equipment is the British Acoustic Full Range Recording System with which three microphones can be used at one time. Mobile equipment with provision for three microphones and a separate mixer is available for outdoor work.

Cameras to fit every need are provided and three printing machines which print both sound and picture. If necessary, the printing machines will print superimposed titles. This facility, which is not provided in any other printing laboratory in India, is ideal for those who wish to produce an all-India picture, with superimposed titles in languages other than that in which the pictures are recorded.

• • •

Crosley Plans

A Mohammedan priest was engaged in blessing the new showrooms, which AHMED FAZELBHOY is readying for the display of Crosley refrigerators, when I arrived for an inspection.

The writer couldn't figure out just what it was the priest was doing, but had no difficulty at all in seeing what results Mr. Fazelbhoy is getting in the reconstruction of the building. When completed, it will be a showroom which would gladden the heart of POWEL CROSLEY, JR.

It will have a lot of glass frontage on a busy throughfare, will be well set up and backgrounded, and will be augmented by an electric sign, 15½ feet long and four feet high, bearing the message: "CROSLEY—World's Best Refrigerator." The Fazelbhoys are investing considerable money in the promotion of this new product.

When Mr. Fazelbhoy decided he wanted to go into the refrigeration business, he wrote for advice to some of the American firms—rubber and battery manufacturers—whom he was representing in India. These people suggested he subscribe to AIR CONDITIONING & REFRIGERATION NEWS, and study the situation through its columns.

This he did, and after a time came to the conclusion that Crosley was the franchise he wanted. The deal was made entirely by correspondence.

(If "Zeke" Carrithers doesn't make capital out of this story, he's missing a bet!)

AHMED and FAZEL FAZELBHOY, with their families, live together in a charming home in a fashionable Bombay suburb. They took me out for a real Indian dinner one night, and it was quite a treat.

• • •

Reception for GFT

Climaxing the week in Bombay was an afternoon reception "for the Editor of REFRIGERATION NEWS and Representative of the American Refrigeration and Air Conditioning Industries" given by the Fazelbhoys on the evening of April 23.

To this colorful affair at the Bombay Presidency Radio club (made so by the rich garments and jeweled ornaments of the Indian women) came not only executives of the Bombay refrigeration industry, but representatives of every commercial and industrial field in India.

After the guests had all filed past the receiving line, food was served; and the editor was taken from table to table, to converse with the various

Reception For the Editor

Mr. & Mrs. Ahmed A. Fazelbhoy
request the pleasure of the company of

---

at a reception to meet

Mr. George F. Taubeneck
(Representative of the American Refrigeration & Air-conditioning Industry & Editor of the Electric Refrigeration News)

at the Rudio Club

on Thursday, 23rd April 1936 at 5-45 p.m.

R.S.V.P.
U.S.L. Battery Service,
New Queen's Road,
Bombay.

When Ahmed Fazelbhoy, Bombay distributor for Crosley radios and refrigerators, set out to give the editor of Air Conditioning & Refrigeration News a royal reception, he went about it in a royal way. Above is the formal invitation which went out to competitors, government officials, prominent Bombay dignitaries, socialites, and princely potentates.

dignitaries. It was an unforgettable experience.

The following is the list of men representing various business and professions in Bombay, present with their wives:

Rahimotoola M. Chinoy, Sultan M. Chinoy, and Habib N. Chinoy, Frigidaire & General Motors Corp.; Alimahomed Rahimtoola, Frigidaire service; Mr. Katrak, Frigidaire sales.

J. A. Dooley, and M. C. Mujumdar, International General Electric Co.; A. L. Gilford, Bombay Electric Power House & Refrigeration Hire-Service; Mukhlis H. Tyebji, Electric Power House, in charge of service department; T. R. Strueli, Volkart Bros. (Kelvinator).

R. M. Prouse and F. S. Barlow, Westinghouse Co.; M. H. Lala, engineer, F. & C. Osler (Servel); Shantilal Shah, Overseas Trading Corp. (Fairbanks-Morse); Gulam Hussin Dossani, film industry.

M. A. Fazelbhoy, Bombay Radio Co.; Fazel A. Fazelbhoy, U. S. L. Batteries; George Azrilenko, American "Z" Corp.; Sultan Nathani; A. M. Thariani, architect and engineer; Roshan Lal, insurance; A. S. Chadwick, insurance; Husein A. Fazhelbhoy, insurance; G. S. Dharamsey, insurance; E. G. Currimbhoy, insurance; Suleman Dawoodbhoy, insurance.

Ahmed Nathani, businessman; Ismail Abdulla, businessman; Mahomedali Rajabally, stockbroker; G. M. A. Calcuttawalla, businessman; Rajabally P. Ebrahim, importer; Abbas Huseinbhoy Lallji, businessman; Habib I. Rahimtoola, businessman; Abdulla I. Rahimtoola, businessman; Husein A. Curmali, businessman; Ebrahim Curmali, manufacturer; Gulam Husein Chinoy, businessman.

Jan Mahomed, importer; Gulamali Currimbhoy, businessman; C. J. West, banker; Ismail Mahomed Jaffer, landholder; Dr. M. E. Merchant, M. O.; Dr. R. V. Sanzgiri, M. R. C. P.; Dr. Abdulla Curmali, M. R. C. P.; Dr. Mahomedali Mistri, M. D., M. R. C. P.

M. N. Chaiwalla, M. H. A. Fazelbhoy, Habib Parpia, Ahmed I. Rahimtoola, lawyers; Adi Patel, journalist.

Miss Zarina I. Rahimtoola, Miss Parin Moolji, Mrs. Husein K. Nathani.

Bombay's Crosley Distributor Gives a Party for the Author

The main table and a section of the guests at the party given in honor of the author at the Presidency Radio Club, Bombay, by Ahmed A. Fazelbhoy, Crosley distributor in Bombay. The author is at the head of the table. At his right are Mrs. Ahmed A. Fazelbhoy, Mr. Fazelbhoy, Mrs. Mody, H. Chinoy, Frigidaire Bombay distributor; Mr. Mody, and Mrs. H. Chinoy. To his left are Mrs. E. G. Currimbhoy, Mr. Prowse and Mr. Barlow of Westinghouse, Mrs. Fazel A. Fazelbhoy, and R. M. Chinoy.

Bombay Garage—and the Maharajah

Another example of Bombay hospitality which will linger long in my memory was a dinner tendered by the Messrs. Chinoy of the Bombay Garage, Frigidaire distributor in Bombay.

F. W. KLATT, managing director of General Motors India, Ltd., and the writer were the only people present who were not native-born members of the Indian race.

All the guests (such as SIR ALI-MAHOMED DEHLAVI, Bombay Minister for Local Self-Government, and PRINCE GHANSHYAMSINHJI of Limbdi) were prominent in Indian politics, society, or business. At the dinner, which had umpteen courses of strange and unfathomable foods, the conversation evolved entirely around politics and government—in which several of these men were playing leading roles.

It was very much as if, in America, one were dining with five Senators, nine Representatives, Chief Justice HUGHES, JIM FARLEY, EMIL HURJA, FELIX FRANKFURTER, COL. FRANK KNOX, and AL SMITH. The new Viceroy and the new Constitution, plus the restive labor situation, were cardinal topics.

Among the guests was a real, live Indian prince—the Maharajah of Porbandur, with his wife. He was on hand early, and I discovered that he is not only keenly interested, but well-informed on air-conditioning. He seemed to be a gentleman of high intelligence.

Two of his subjects (lovely Indian women, in *saris* of amazing sheerness and rich pastel shades—what a feeling for *color harmony* these Indians have) arrived shortly before dinner, made a sweeping obeisance, and dropped large silver coins at his feet.

The principle by which Indian princes acquire their fabulous wealth, I take it, is something like the Woolworth idea: small contributions made with great frequency by large numbers of people.

It was a warm, starry night, and the dinner was served on the roof of the Bombay Garage. And boys, that was some roof. It was a tile-and-porcelain *mosaic,* in rich patterns. Gay Japanese lanterns were strung around, and it was a gala atmosphere.

After the dinner came an Indian cabaret, with authentic Indian music, dances, and costumes. The songs and dances told a running story which, of course, I couldn't figure out.

SULTAN CHINOY, head man of the Bombay Garage, assigned one of his attractive daughters to me for the show; but she didn't know what was going on, either. Having been edu-

cated in England and on the Continent, she had a European, rather than an Indian, background.

The Bombay Garage is one of the leading business houses in India. In addition to its big Chevrolet, Vaux-Hall, Delco, and Frigidaire business, it operates a string of gasoline filling stations, does automobile repair work, and has radio interests.

As part of its slogan "Our Watchword Is Service" the company maintains a body repairing and body building workshop and a central service station with all the appliances of modern car-servicing requirements.

Their service stations, Mr. Chinoy told us, are located at strategic points in the City of Bombay and on the way to the Suburbs of Mahin.

The company had its real beginning in 1904, for although in that year it was already doing an extensive business in wheat flour, kerosene oil, liquid fuel, and paraffin wax, it then received the agency for Shell Petrol, which it still sells.

With four branches, in Ahmedabad, Jubbulpore, Nagpur, and Poona, all important centers, and dealers covering the whole of India, Mr. Chinoy calls his organization "the most up-to-date in India."

That it is progressive is illustrated by the fact that in 1922 the company obtained the representation of the Marconi's Wireless Telegraph Co., Ltd., as their agents for external communications and established the India Radio Telegraph Co., Ltd., for whom the firm acted as secretaries and treasurers—the first Indian company to be entrusted by the government with this public utility service.

Air conditioning, soda fountains, ice cream freezing, milk and beer cooling, cold storage and display counters are included in the Frigidaire equipment sold by Bombay Garage.

Main Table at Ahmed Fazelbhoy's Party

Main table at the party given for the author by Ahmed A. Fazelbhoy, Bombay Crosley distributor, at the Presidency Radio Club. The author, at the head of the table, has at his left his host, Mr. Fazelbhoy; Mr. Prowse and Mr. Barlow of Westinghouse, and Mrs. Fazel A. Fazelbhoy. On his right are Mrs. E. G. Currimbhoy, Mrs. Ahmed Fazelbhoy, H. Chinoy of Frigidaire, Mr. Mody, and Mrs. H. Chinoy.

Bedford truck, built by Vaux-Hall, a British firm, Albion trucks built in Glasgow, Scotland, and a Chevrolet truck designed and built for tropical service are handled along with the Chevrolet passenger car.

* * *

Sell the Idea

HABIB N. CHINOY, a clean-cut young member of the family who received his engineering training in England, heads the Frigidaire division of the Bombay Garage.

ALIMOHAMED RAHIMTOOLA is the engineering and service manager; and MOHAN T. ADVANI is sales manager.

Mr. Advani has four salesmen in Bombay, working on salary and commission. They get prospects by canvassing through friends and users, and from tips by their service men. The Bombay Garage advertises extensively in newspapers and that helps, too.

Mr. Rahimtoola keeps three field service men at work. Riding motorcycles, they cover a territory radiating 24 miles from headquarters.

More than 3,000 Frigidaire compressors are in use in Bombay and environs. About 500 of these refrigerate bottle coolers and ice cream cabinets.

One air-conditioning installation has been sold (undoubtedly there will be more by the time this is published)—a 1½-hp. job to office of the National City bank in Bombay.

Biggest task, avers HABIB CHINOY, is that of *selling the idea* of refrigeration. Indians must be educated up to it. Seldom does an electric refrigerator replace ice in Bombay, for ice is little known. Mr. Chinoy estimates that there are probably 50 electric refrigerators in use in Bombay for every icebox.

Four younger members of the Chinoy family have been studying air conditioning assiduously in England and America; and when they get into harness, The Bombay Garage expects to go into the air-conditioning business in earnest.

Picture of these four young men, Ebrahim D. Chipoy, Akbar N. Chinoy, Fazal R. Chinoy, and Fazal D. Chinoy, was published in the March 25, 1936, issue of REFRIGERATION NEWS.

* * *

G-E's for Rent

C. R. PALMER, managing director of International General Electric Co. (India), Ltd., had gone to America before I arrived in Bombay; but people in his office were able to tell me something about the business.

G-E refrigerators have been sold for nine years, with one interruption of two years, in India. Twelve agents in India and Burma (none in Ceylon) work through headquarters in Bombay. One of these, United Eastern Agencies (an Electric Bond and Share property) has agencies in Karachi, Poona, Broach, and Nasik. S. NELSON is manager of refrigeration sales for this concern.

In Bombay I. G. E. of India maintains one commission salesman, who goes after commercial and "flat" (apartment house) business. I. G. E.

Interviewing a New Distributor

Much of the author's information about India and its merchandising problems was derived from conversations with Ahmed A. Fabelbhoy (left) and Fazel A. Fazelbhoy (right). This picture was taken in front of their Bombay headquarters.

sells only for cash. If the customer wants to buy on time, he is referred to the Bombay branch of the Commercial Credit Co.

All Monitor Top units are sold on a straight four-year guarantee. Very little service trouble has been experienced, and replacements are few. Most common service call is caused by the controls. In India, service men devoutly wish that all controls were placed on the *outside* of the cabinet, instead of the inside (for the same reasons reported in the Singapore story).

I. G. E. is just getting started on air conditioning. One small installation (1½-hp., in the Haffkien Institute, for use in serum cultivation) had been made up to the time of the interview.

Most customers for household units go to the Bombay Electric Supply & Tramways Co., Ltd., a privately-owned utility company which *rents* refrigerators.

After they have been renting refrigerators for awhile, people frequently find that they might as well buy them outright, G-E men find.

Monitor Top sales for the last three years, I was informed, have been running from 500 to 600 units per year.

Although the utility is of great help in getting household refrigerators into homes, some Bombay refrigeration men are of the opinion that it is retarding air-conditioning development. Here's why:

The lighting rate (four annas—9 cents per kilowatt) is charged for air-conditioning operation. In explanation, the utility points out that an air-conditioning system cuts down its electric fan load—which is quite an item in Bombay.

In some cases, however, a large user of electricity (like a theater) can get around this condition because of a prior bulk rate individual contract with the utility.

Still another handicap to air-conditioning progress in India is the fact that in some places it is almost impossible to get water for condenser cooling.

* * *

Leading Factor

By virtue of its rental system—which seems to fit the peculiar needs of a country in which most of the prospects come only for two or three-year periods—the Bombay Electric Supply & Tramways Co., Ltd., is probably the most important factor in household refrigerator sales in Bombay.

A. L. GUILDFORD, in charge of the system, we found to be an alert, aggressive Englishman, who leaves nothing undone to build load for his company.

For 14 rupees a month his company will rent an electric refrigerator—any size available—to its customers. This includes all service. Refrigerators must be rented for a minimum of six months. An installation charge of seven rupees, eight annas, is made.

Each year the Bombay Electric Supply Co. buys refrigerators, for rental purposes, from a different distributor. This year Westinghouse was the refrigerator selected. In previous years General Electric, Frigidaire, Kelvinator, and HMV machines were bought.

A few ranges have also been rented by the utility, but the range business has been hard going. Charcoal is the national fuel for cooking in India.

Mr. Guilford's chief complaint against American electric refrigerators is that they are frequently underpowered. For India, he says, oversize motors are needed. His service men have also experienced difficulties with capacitor motors.

In Bombay both d.c. and a.c. (50 cycles) current is supplied. The rate for refrigerators is one anna per kilowatt (about two cents). "Up country" the rate gets up as high as 12 cents per kilowatt. India is entirely served by "private" utilities, most of them generating current by Diesel power.

The Bombay Electric Supply & Tramways Co., Ltd., does a good deal of promotion—newspaper and outdoor advertising—(all its street cars carry promotional banners and placards). Its initials form, rather fortunately, the word BEST; and this device is prominently used in all advertising.

* * *

Ships That Sailed

Romance lingers around the Ballard Estates offices of Volkart Bros., Bombay distributor for Kelvinator. This concern dates back to the early days of British trade with India, to the days of sailing vessels, fights with the Dutch and Portugese, and unknown risks in the land of the Maharajahs.

Today the company trades in cotton, has textile interests, and goes in for large-scale engineering. R. SCHERER is managing director, T. R. STREALI and P. A. OTTO are leading lights in the company's refrigeration and air-conditioning business.

Household refrigeration business in the Bombay Presidency, say these gentlemen, is so completely in the hands of the Bombay Electric Supply & Tramway Co. that there isn't much point in worrying about it. So they concentrate on commercial business and air conditioning.

In the latter field they go after the "big stuff"—like the dining room of the Taj Mahal hotel (where I had several meals, and concerning which I'm ready to testify that they certainly keep it cold enough) and some of the sets at the film studios.

They have also been looking into quick-freezing possibilities, in conjunction with GEORGE AZRILENKO, a thoroughgoing engineer who is local representative for the "Z" process (invented by M. T.

How's Business?

Ahmed A. Fazelbhoy, Crosley distributor in Bombay, discusses current business conditions.

ZAROTSCHENZEFF) of quick freezing.

At lunch with Messrs. Azrilenko and Streali, they told me that the likeliest customer for quick-frozen products would be the colonial army. In some provinces meat is cheap; in others, expensive. It could be quick frozen in the "cheap" localities, and shipped to army cantonments in the "expensive" places.

Here they run into municipal difficulties, however, as do all concerns which are after any sort of commercial refrigeration business in India.

For example: in Bombay a tax must be paid on every 100 lbs. of meat at the slaughter house. Moreover, that meat *must be sold at retail on the same day it is slaughtered.* If it remains unsold after 24 hours, it must be thrown away. That's the law. It also helps explain (together with the religious disinclination of the Hindus to kill *any* animal, why there are so many rats in Bombay, and why they grow to lengths of six and eight inches).

The municipality keeps alive this ancient religious fetish, in this day of scientific food preservation, for long periods of time, because of the added revenue it brings. If meat were refrigerated, much less would be thrown away, much less slaughtered, and hence less revenue from slaughtering.

In selling commercial refrigeration, patient Hindu "educators" must first pave the way by getting the idea of food preservation across to illiterate, religion-dominated, convention-bound, shopkeepers. That is a long and often painful task.

Practically all commercial cabinets used here are built locally, not only because of high freight costs and the tariff, but because Indian engineers claim that American cabinets don't hold up under India's burning climate. Here they are built out of teakwood by Chinese carpenters, and insulated with cork.

According to Messrs Azrilenko and Streali, solid carbon dioxide refrigeration seems to have a promising future in India. Already the Sirdar Carbonic Gas Co. is manufacturing it in Bombay, the Alambic Co. in Baroda, and Spencer & Co. in Madras, Lucknow, and Cawnpore.

At present its chief use is in refrigerating railway cars, but other uses are contemplated.

Railway Conditioning

R. M. PROWSE, manager, and F. S. BARLOW, sales manager of the Westinghouse Electric Co. of India, Ltd., Feltham House, Graham Road, Ballard Estate, Bombay, sell refrigeration products through the General Electric Co. (India), Ltd.—which is the English G-E, not the American (see our story on Singapore).

These gentlemen are highly interested in promoting railway air conditioning in India.

Nobody could render more heartfelt agreement to the pronouncement that India railway cars *need* air conditioning than the writer. As I have said before, the most uncomfortable periods of my life were spent traveling on Indian railways in 110° plus temperatures, with the dust so thick breathing was next to impossible.

To them, then, I communicated a little idea of my own. Indian railway cars are divided into first, second, and third class compartments, as in Europe. First class is tremendously expensive, second class about half of first, and third class about half of second, in cost.

Why not, as a starter, condition only the *first class compartments,* rather than the entire car? Generally, there's only one to a car, and it occupies about one-sixth of the total space. Already a separate inclosure, it could be insulated and equipped with a unit of adequate capacity at comparatively nominal cost. And anyone who can afford to travel first class—could—and would, gladly—pay still higher first class rates to enjoy the blessings of air-conditioned comfort.

Muller & Phipps (Asia) Ltd. of Nicol Road, Ballard Estate, has long represented Brunner Mfg. Co. in the air compressor business, and is just getting started with commercial refrigeration.

C. F. BRIGGS is manager of the Bombay office. WALTER B. SCHLEITER, manager for India, was in America when I called. R. E. HARDING is sales manager.

This concern also has an office in Calcutta, at Avenue House, Chowringhee Square with H. A. DAWTON in charge. General headquarters is at 1 Park Ave., New York City. Muller & Phipps has the Brunner agency for the Far East, and also has connections with Sparks-Withington and Stewart-Warner.

Scented Air

Air conditioning has generally been thought of as having six functions, namely: heating, cooling, humidifying, dehumidifying, cleansing, and circulation. But it has remained for an Indian engineer, H. N. PHERWANI, to add a seventh, *perfuming.*

For use with his Neo-Aire and Kooler-Aire fans, Mr. Pherwani has blended some 147 different scents to make the air fragrant.

Now please don't laugh. Scenting the air is appreciated by the Indian people, and is something they are willing to pay for.

In addition to his consulting work with the C. & I. Engineering Co. (which has the Williams Oil-O-Matic agency), Mr. Pherwani runs a correspondence school for budding engineers, and is an inventor.

He also made to me the most succinct statement I have ever heard relative to the chief obstacle in the path of the air-conditioning industry and its hoped-for expansion:

"Everybody wants air conditioning, but nobody wants to *pay for it.*"

. . . EGYPT

Refrigeration & Air Conditioning

Only one person in 150 is a prospect for electrical appliances in Egypt. The rest are living along the margin of bare subsistance. But appliances *can* be sold, if you know how to find the prospects.

To find them and to sell them, you have to know your way around. Merchandising is quite bound up with manners and customs and *savoir faire.* In the following pages some of these mysteries are touched upon—lightly.

By Appointment

Gregorakis & Co., distributor for Frigidaire in Egypt, is easily the biggest refrigeration firm in that hot country. And its biggest customer is the royal Egyptian government.

For many years Mr. Gregorakis has also been the Buick distributor in Egypt, and that's how he got his "in" at the royal palaces. The recent deceased King Fuad liked Buicks, and he liked Mr. Gregorakis. Each year Fuad bought several new Buicks; likewise many of his henchmen, his councilors and advisors bought Buicks too.

A procession of state was really something for a General Motors executive to see, for it was practically a Buick parade. And when Mr. Mooney or any of the bigwigs of General Motors export division came out to the land of the pyramids and the Sphinx, Mr. Gregorakis was generally able to arrange a procession of state for their edification.

When Frigidaire came along, King Fuad thought well of that, too; and before Mr. Gregorakis had finished with him, the King had purchased more than 70 units for his palaces! He bought the works: water coolers, bottle coolers, ice cream cabinets, meat coolers, and individual household refrigerators for the guest rooms.

Just before his death he ordered a 12-cu. ft. job installed by his bed, for keeping serums, food, and drink.

Once Frigidaire had become "by appointment" the King's refrigerator, it was simple to go down the line and sell Frigidaires to members of the Court and the Egyptian government.

• • •

New Prospects

That's the way you should work in Egypt if you want to sell an article which calls for a real expenditure of money, like an automobile or an electric refrigerator. There are a lot of people in Egypt (1,500,000) but less than 10,000 have income above the bread-and-water level.

Mr. Gregorakis, a handsome, high-strung individual who practically lives in his beautiful showroom, has it all doped out. You segregate the possible prospects, then you plant your product with the *leaders* of those small groups, and from then on it's simply a matter of going on down the line.

He has had the Buick agency for 20 years, the Frigidaire agency for eight. J. E. BENGHIAT, a live wire who would be a crack sales manager in any league—including the American—handled the refrigeration end of the business. Mr. Gregorakis runs the company, and the automobile division. They have the finest showroom in Cairo for *any* product.

A product which requires servicing—and that means both automobiles and refrigerators—predicates a risky business, declares Mr. Gregorakis. He has seen a lot of competition come and go, the latter because they didn't understand this fundamental principle.

First thing a distributor must do who wants to *stay* in business is set up a thoroughly good service department, with a well-trained staff and an adequate supply of parts. Then, and not until then, can he think about selling.

In the export field, both Messrs. Gregorakis and Benghiat will tell you, good will is the most valuable asset of a product. The distributor must *take care of the owner,* must keep the product in shipshape order, if he intends to stay in business for any length of time.

• • •

Long Hours

These two gentlemen observe no set hours. They come down early and stay until late at night—taking, of course, the usual early afternoon *siesta* of the tropics.

"There isn't anything else to do in Cairo but work," they explain with a smile.

During June, July, and August, business comes to a virtual standstill. It's too hot and dusty for work or relaxation in Egypt. Prospects all leave town. So the only thing to do is lock up and go off on a cruise somewhere. But during the remainder of the year there's always business to be had—if you know how, and if you know the right people.

In Egypt, business conditions depend almost entirely on the price of cotton. Things were pretty tough from 1930 through 1933. But now, thanks to Roosevelt's cotton curtailment orders in America, and to favorable trade deals engineered in Germany, business looks pretty good.

There isn't much competition from ice in Egypt, although it's very cheap. On a contract a commercial ice user can get a 54-pound block for two-and-one-half piastres (12 cents) or even less.

It's the firm belief of Gregorakis and Benghiat that if the ice manufacturers would expend their energies on *promotion* instead of mutual destruction, the electric refrigeration business would quickly double itself.

Why? Because 92% of Egypt's population consists of Egyptians, whereas less than one per cent of all electric refrigeration sales are made to Egyptians—the reason being that the natives who could afford refrigeration don't understand the need of it.

The big job to be tackled is education; and a healthy forward-looking ice industry would be a big help in that direction.

Air conditioning? They need a leader. Mr. Gregorakis offered to install a room cooler in King Fuad's bedroom free of charge just to get things started, but Fuad would have none of it.

"That's an artificial way to live," said the King, dismissing the subject with finality.

Perhaps the young new king Farouk may lead the way for air conditioning in Egypt.

• • •

Loss of Caste

Mr. Benghiat, not satisfied with simply working the government territory, bethought himself of a new field for prospects: the excellent University of Cairo.

First he went out to this beautiful campus and called on the medical and physics branches. They bought refrigerators for keeping serum and apparatus at proper temperatures.

Next step was to sell the professors who headed these departments household refrigerators for their homes. That started the ball rolling, and soon Mr. Benghiat had pretty well saturated the academic market. Also, seeds had been sown among the students.

Through bitter experience Mr. Benghiat has found that he has to do most of the selling himself, personally. Egyptians sufficiently well educated to sell refrigerators shudder at the idea of degrading themselves so far as to become salesmen.

There is a very real reason for this feeling, as we shall see presently. Put briefly: the entire population of a big city like Cairo or Alexandria or Port Said seems to support itself by selling things on the street. These hawkers sell anything and everything: pencils, post cards, water, candy, cigarettes, souvenirs, rugs, handicraft of all sorts, food, shoes,—and

I even saw some vendors with midget radios slung over their backs.

They are very persistent beggars, these street hawkers; and have, of course, no fixed prices. Haggling is both an art and a sport with them. It is no wonder that salesmanship is in such poor repute among the educated of Egypt.

Nevertheless, it is occasionally possible to hire a few out-of-work men who will take a job of selling refrigerators as a stop-gap to office positions. Such salesmen are paid three or four pounds a month ($15-20), plus a small commission, say 5%.

This commission applies to all sales made within two months of the registering of a prospect. The latter stipulation becomes necessary because of the ingrained habit of bargaining the citizens of Cairo have.

After the salesman has aroused interest and created desire, the prospect generally comes down to the showroom in person, in hopes of elim inating the salesman's commission and haggling down the list price as well.

As in all countries where the custom of bargaining prevails, the mark-up has to be high enough to compensate for concessions.

* * *

Commercial Business

As in many tropical countries, commercial business has been slow for two reasons: (1) there are very few food shops catering to Europeans; (2) the small native markets and cafes need a deal of educating before they're ready to become prospects.

Refrigerating machines come through Egyptian ports with 8% duty attached—cabinets, which are classed as furniture, are charged a 24% tariff. Household refrigerators are imported complete; but the higher duty, plus shipping costs, makes it essential to build commercial cabinets in Egypt.

It took distributors in Cairo quite a while to teach local cabinet makers how to build good cases which wouldn't warp; but by using old McCray boxes as models, and exercising much patience, they have become able to turn out pretty good oaken cabinets.

Ice cream is beginning to catch on in Egypt, and distributors believe that the ice cream cabinet business is going to be very good in the near future.

* * *

Service

A while back was mentioned the stress Mr. Gregorakis lays on service. We can take his service corps as an example.

Most of his men are not highly educated. Most of them have been with him since 1926. It took patient effort to teach them; and at that, they have learned chiefly by experience.

A Greek heads the service organization; his assistants are Greeks, Italians, and Jews. Another Greek heads the service organization in the Gregorakis branch in Alexandria. The dealers in Port Said, Ismalia, Suez, Mansourah, Assont, and Heliopolis are supplied with service men who have learned their trade in the Cairo organization.

* * *

Small Market

H. D. McClellan, merchandising manager of the British Thompson Houston Co. in Cairo, doesn't think much of the Egyptian market for refrigerators.

He showed me some figures supplied him by the Le Bon electric power company (a private utility owned by Belgian and French interests, with concessions for Cairo, Port Said, and Alexandria) of the number of refrigeration machines on its lines. The figures:

Cairo—30 commercial, 214 household, total 244. Alexandria—19 commercial, 109 household, total 128. Port Said—eight commercial, 28 household, total 36.

(Mr. Benghiat of Frigidaire says these figures are small because they do not contain the units sold to the king and government, which are lumped together with other current-consumers in the palaces and government buildings on a flat rate.)

Mr. McClellan agrees with the gentlemen from Gregorakis & Co. that Frigidaire leads, General Electric (BTH) is runner-up, and nobody else seems to be in the race.

BTH refrigerators are sold entirely by advertising and display. At the Cairo showroom there are salaried floor men, and a salesmanager on salary plus commission. Dealers in other Egyptian cities sell on consignment.

There is no washing machine business to be had, and very few vacuum cleaners are sold. Current comes too high for electric ranges to be considered. One G-E dishwasher has been sold to a doctor.

Radio, however, is going strong. It's a profitable business, too—divided up chiefly between BTH, RCA-Victor, and the ever-present Phillips.

Two Egyptian broadcasting stations are putting on good programs, and creating a market for small 5-tube sets (4-tube sets don't work in Egypt, for some reason). One broadcasting station is at Abu Zaabel, with an alternative transmitter in Cairo. The other broadcasts from Alexandria, with a relay in Upper Egypt.

The BTH 5-tube set retails for 10½ pounds (about $54) with 10% off for cash.

Mr. McClellan thinks it noteworthy that Tantah, the third largest city in Egypt, has *no* electric refrigerators.

Entirely populated by native Egyptians, the city has only recently begun to enjoy 24-hour electrical service. Formerly the Le Bon Company supplied electricity—at high rates—only at night.

* * *

Good Salesmen Rare

BTH has also found the problem of getting good salesmen practically hopeless. Once they trained a crew of outside salesmen and sent them out to call on boarding houses. The project flopped dismally.

Living in Egypt are Egyptians, Syrians, Greeks, Italians (and Jewish members of all of these races), plus a very few British and Americans. The British subjects are almost exclusively army men, who come to Egypt for two year periods. The rental scheme, which has been found so successful among this type of prospect in India and Arabia, has not been tried in Egypt.

Time payment sales are out of the question in Egypt because the seller has no recourse to law in the case of default. Once the refrigerator is installed, it becomes a part of the property, and cannot be repossessed.

Nevertheless, about 50% of the refrigeration equipment brought in is sold on credit. The purchaser signs a note for a year or 18 months and can be sued if he doesn't pay.

Egypt's Largest Electric Refrigeration Dealership

Left: Entrance to the biggest refrigeration firm in Egypt—Gregorakis & Co., Frigidaire. The company is Buick distributor as well. In the doorway is J. E. Benghiat, refrigeration manager. Center: the author gets a shine as he and a part of the Benghiat family stop at a sidewalk cafe in Cairo. Right: the Benghiat brothers.

Miscellany

Gas (manufactured from coal) is fairly expensive in Egypt. Inasmuch as Egyptian servants simply cannot learn to shut the gas off—which means very high bills indeed—few gas ranges are sold. Kerosene and charcoal are the chief fuels for cooking.

A few electric ranges have been sold to factory managers with private power plants, who pay nothing for the electricity they pipe over to their living quarters.

Electric teakettles, normally a popular British-Thompson-Houston item, do not sell in Egypt. The large Italian population drinks no tea, and everybody else goes out to the innumerable coffee shops for beverage.

Electric irons are sold widely, but these are mostly low-priced German irons. Egypt is said to be essentially a price market; quality seems to count for little.

* * *

Air Conditioning

Air conditioning is surely and sorely needed in Egypt; but when prospects hear a price quotation, their hands go up, and their backs turn.

The cinemas (picture shows to us Americans) have sliding roofs which expose one-third of the roof area to the stars on hot nights. There are also open-air theaters, where patrons sit at tables and eat and drink while the latest importation from Hollywood and Paris appears before their eyes. These open air theaters are located at city outskirts. Many cinemas close entirely for the summer. These latter should be real prospects for air conditioning.

The wagon-lits (equivalent of Pullman Cars) need air conditioning badly. Dust and heat are frightful—just ask me for corroboration—in the summer. It is rumored that Wagon-Lits Internationale (the French owners) are interested.

First air-conditioning installation in Egypt apparently will be in a building which houses the chemical division of the Egyptian Administration, which has advertised for bids.

* * *

Power Rates

A special rate for refrigerators is offered to Cairo users by the Le Bon Company. It works out like this:

Between 5 p.m. and 11 p.m. the rate is 23 millimes (11½ cents) per kilowatt hour. Rest of the day it's 16 millimes (8 cents) per kilowatt hour. In Port Said these rates are approximately the same, although in Alexandria, if you know how, it's not hard to get lower rates. Fact is, if you go about it right, you can even get a 10-millime rate (5 cents per kwh.) in Cairo.

To tally the current in these cases, the Le Bon Company installs a special meter with a clock on the refrigerator.

The average user (who has a 7-cu. ft. model) pays about one pound ($5) per month for current.

Power supplied is 40 cycles, single phase. The Le Bon concession will run for 10 years more, after which company officials have scant hope for renewal. Hence improvements in distribution facilities, or long-range promotion, do not interest the company. They're after all they can get while the getting's good.

* * *

Three Sundays

Three Sabbath days are observed in Egypt: Friday is the Mohammedan holiday, Saturday the Jewish, and Sunday the Christian. Hence the shops must stay open seven days a week. That knocks out the week-end quantity purchase argument for buying a refrigerator. There are no week-end bargains.

Nor does the economy argument sound convincing in Egypt. Ice is very cheap. Fruit and vegetables are very, very cheap. Everybody goes to the market every day.

Furthermore, the orthodox Mohammedans who form so large a portion of the population, will not keep meat over night—it's against their religion. (Many Mohammedan and Jewish religious laws were originally hygienic in purpose. For instance, the Mohammedan must wash before he prays. The rule about not keeping meat over night was entirely justified when it was ordered, for that was before the days of proper refrigeration.)

So, you see, the distributor in Egypt has his problems.

But he lives in an interesting country.

* * *

Egyptian Agencies

Frigidaire: Gregorakis & Co., 17 Rue Kasr El Nat.

General Electric: British Thompson Houston Co.

Kelvinator: Mosseri, Curiel, & Co., Rue Emad el Dine, Cairo.

Apex: J. Calderon, Rue Emad El Dine, Cairo.

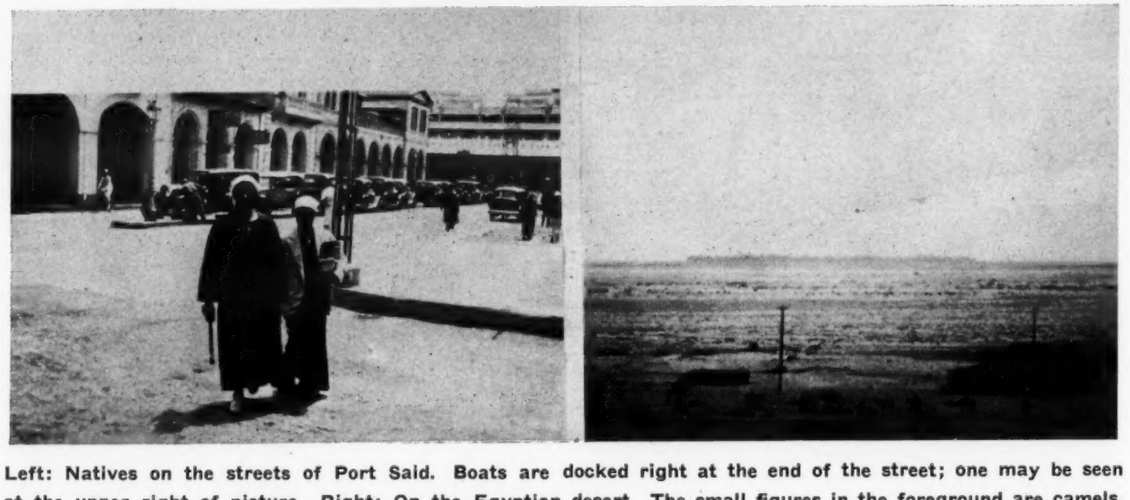
Coldspot: Thuillot Vincent & Co., Rue Soliman Pacha, Cairo.

Crosley: I. Gattegno, Rue Emad El Dine, Cairo.

Sparton: Grands Magasins Hannaux, Alexandrie.

Copeland: G. Zarb, Rue Fouad ler, Alexandrie.

Just a Few Steps from Ship to Desert



Left: Natives on the streets of Port Said. Boats are docked right at the end of the street; one may be seen at the upper right of picture. Right: On the Egyptian desert. The small figures in the foreground are camels.

. . . SPAIN

Refrigeration & Air Conditioning

Despite the horrors of today's civil war, which has been turned into a Fascist-Communist dogfight by Italy, Germany, Russia, and France, refrigeration equipment is still being sold in Spain.

This examination of refrigeration distribution in Spain was made just before the Civil War broke out; but inasmuch as it concerns Barcelona and the Catalonian territory—which as yet has been unexposed to actual fighting—the conditions set forth still hold true.

At the end is appended a survey of refrigeration business in Spain *since* the war got under way, a survey based on letters written to the author by friends who import in or export to Spain.

Business

Spain ranks about fifth among all the countries of the world in imports of electric refrigeration equipment. Commercial business has been marvelous. Household sales have been excellent, and getting better all the time. A real demand has sprung up for air conditioning.

Business is fine, and could be much better. *But American manufacturers can't get their money for the equipment they have shipped to Spain.*

That worries Spanish distributors as much as it distresses American manufacturers. For the distributors realize that if this situation continues, American manufacturers will soon cease shipping equipment to Spain. Whereupon all their investment in building up a name and organization will go blooey.

(Note: All shipments of refrigeration and air-conditioning equipment from the United States to Spain have been held up pending the settlement of the revolution.)

* * *

You Can Come In But You Can't Get Out

Here's the how of it:

Spain is worried about her unfavorable trade balance. America, for example, exports far more to Spain than she imports from the land which once sent Christopher Columbus to the New World.

So the Spanish *senors,* rather than putting up impossible tariff barriers or imposing import quota restrictions, have hit upon the simple expedient of preventing money from leaving their land.

Now when the Maybecold Corp. ships over a hundred household jobs to the Souedad Electricidad Espanodad Whereismydad, the latter deposits, say, 50,000 pesetas in payment with the Central Bank, which is government-controlled.

The Central Bank is supposed to buy dollars with these pesetas, and send the dollars to Maybecold Corp. But the Central Bank can take its time in such matters, and it has been taking its time for a year and a half now with American manufacturers.

Of course the Spanish distributor can go to the Central Bank and get the 50,000 pesetas back, but, to tell the truth, he doesn't dare. Such action would arouse the suspicions of the government.

It would be guessed that the distributor had found a bootlegger; whereupon hordes of inspectors and examiners would descend upon the establishment, preceded by the military police, and turn it upside down to find evidence that the bill had been paid.

Dollars have been bootlegged into Spain, sold at a premium, and then bootlegged out again in settlement of an account. But that's against the law. In effect, Spain has made paying a bill illegal.

Luckily, HARRY GRANARY had warned me to "declare" my money at the customs office when I entered Spain. They don't ask you how much money you have when you go to Spain. But they do when you go out. And then, unless you have been forewarned and had the amounts of ready cash, letters of credit, and travellers cheques you possess stamped on your passport visa, that money is taken away from you upon leaving, and deposited to your credit in the Central Bank. Just try and get it out. Numbers of unforewarned travellers are caught thus at the border.

* * *

They Can't Quit

Sad as this situation is, it's just one of the difficulties confronting Spanish distributors.

Salaries of various classes of employes are fixed by law. That runs up overhead. What's more, it's difficult to fire an employe. If he has been with the firm a year, he must be paid one month's salary upon dismissal; if two years service, two month's pay, and so on.

Even then, firing a man may visit upon an employer the gravest sort of woes. Things can happen to his business in much the same fashion as if he had offended the "big shot" of an American gang.

The labor unions have things pretty much under control, and they all gang together.

* * *

Socialistic Republic

Nominally, Catalonia is a republic; but in reality it's socialistic. At the time of my visit the exact form and nature of the government was in a state of evolution. As is the case with our Spanish-speaking South American neighbors, evolution in Spanish government is akin to revolution.

Occasionally shots were fired. Frequently things were thrown, and glass was broken, and perpetually strikes were in progress.

Naturally, there is a great deal of uncertainty in the conduct of business in such a volatile, unstable land.

But in the face of all the annoyances, restrictions, fighting, and unpredictability, business men in Spain were remarkably calm and cheery.

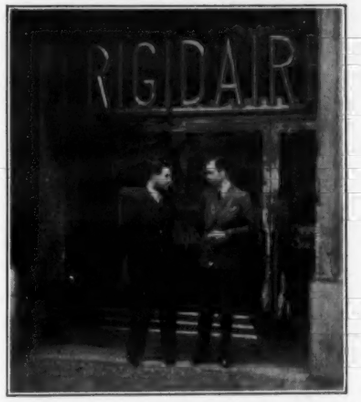
It's a rich country, they say, and some day things will smooth out, and business will be just dandy. Spanish government has needed overhauling, Spain's lopsided internal economy has been crying for readjustment (workers and peasants *have* been oppressed in the past), and now seems to be a right time to clean up and straighten up everything.

* * *

Man of the World

If nothing else of delightful nature had happened to me in Spain—and

Waiting for Business



L. M. Rifa (left), Frigidaire distributor in Spain, awaits customers before his Barcelona offices and showroom.

much did—the meeting of R. FAWCETT and his lovely wife would have made the visit a memorable pleasure.

As European manager for Servel, he was in a position to give me a mass of valuable market information, tips on where and how to get further information, plus a deal of wisdom-evaluated understanding of the general situation which reporters like to call "background."

Being a rank novice at this globe-trotting business, I soon became most envious of Mr. Fawcett's urbanity and *savoir-faire*. The *ease* with which he handles difficult situations in foreign countries is really something to see.

For many years he represented General Electric and other American manufacturers in South America, selling heavy equipment, such as generators, motors and mining machinery. Hence, he knocks off Spanish like a grandee. He even speaks the native Catalan with Barcelona taxi drivers.

His stunning young wife, a Swiss beauty, is also a linguist; and between them they are at home in eight or more languages. They are charming people, and together we explored Barcelona every night during my stay.

* * *

Sausage Dryers

GEORGE and ROY NOBLE, the Spanish-born English brothers who run the Cie Anglo Espanola de Electricidad, have fine offices and a big showroom at 525 Calle Cortes, Barcelona, whither Mr. Fawcett led me as soon as the Nobles were open for business next morning after my arrival.

These gentlemen are contractors, and do a big business. Among the firms they represent is Century Motors of St. Louis. They also have the Philco agency; and before the previously mentioned money trouble in Spain, did a whale of a radio business.

To these enterprising gentlemen—the fastest-moving, fastest-thinking, fastest-talking Englishmen you'll meet in many a moon of travel—refrigeration looked like a coming business, one which would probably pick up where and when radio dropped off.

At first they sold household refrigerators; but it didn't take much of that to convince 'em that this was no game for a white man. So they concentrated on Servel commercial.

Today, along with Frigidaire, they are said to lead the field in commercial sales. And they're getting into air conditioning, having made half a dozen installations of various sizes, with several more jobs "on the fire." Proudly they showed me drawings for an 160-ton job on which they are bidding.

They agree with Mr. Fawcett that air conditioning should be the best line of business they've yet tapped.

Cabinets for commercial installations are generally built on the spot in Spain. It the job is large enough, the cooling chamber is made of *brick* (insulated, of course, with Spanish cork). The Nobles complain that, in order to meet competition, it's necessary to quote this work at cost. Their only profit comes from the sale of the machine.

That doesn't seem right to them; and they didn't feel one whit better about it when we told them that "throwing in" the cabinet at cost with a refrigerating machine seems to be a common practice all over the world.

Perhaps the most interesting commercial application made by Servel in Spain is a number of *sausage-drying* installations.

Dried sausage seems to be a prized Spanish delicacy, and for decades those who cater to this demand have been putting sausages in racks, and hanging them up to dry in the wind.

Trouble with this method is that it takes weeks, especially when there's no wind! Servel cuts the processing time down to matter of days by forced convection.

Temperature is of practically no consequence in this installation; humidity control is what counts. It's purely and simply what Mr. Fawcett calls an "extraction job." So at first they experienced some difficulties in keeping the compressor running; but after a number of ingenious solutions to that problem had been tried, they finally figured out how to jack up the controls properly.

* * *

Not Interested

Chief question ROY NOBLES wanted me to answer was: "What do you do about uninformed competition that cuts prices and extends terms to a point where nobody can make money?"

"You form an association," was the reply.

He said that they had just done that, having organized a committee of Barcelona Refrigerating Merchants, to work in conjunction with the Association of Electrical Industries and Affiliated Companies in Catalonia (Spanish province of which Barcelona is the trading center).

P. LLORENS (Brunswick) is president, M. PUIG (York) is vice president, L. M. RIFA (Frigidaire) is secretary, and I. CODINA (Crosley) and E. BAXERAS (Westinghouse) are voting members.

So far, grimaced Mr. Noble, they haven't got very far. Too suspicious of one another. No real confidence in the association idea. Mr. Fawcett, having noted through the pictures and stories in REFRIGERATION NEWS that I had been entertained at a luncheon or banquet by every Refrigeration Association along the route of this Around-the-World trip, thought it would be a good idea to call a special meeting of the Barcelona Committee to hear me talk.

But Mr. Noble was not impressed. He scrutinized me closely for a moment, and grunted:

"What would *you* talk about?"

Nevertheless, he called up a few of the other members of the committee, suggesting that the editor of REFRIGERATION NEWS would be willing to remain in Barcelona a couple of extra days for a special meeting.

They weren't impressed either.

From Mr. Rifa, however, we obtained a list of the members, and the Articles of Agreement thus far approved. These follow:

In order to improve business, the Barcelona Refrigerating Merchants have decided to fix, starting from the 1st of May 1936, the following selling terms, which must be respected, in Catalonia.

Household Cabinets.—The maximum easy payment terms which can be offered are 18 months in accepted drafts or monthly payments based if possible upon an equal mensual sum.

The first draft must be due, at the latest, 30 days after the installment date of the Household Cabinet.

In an instalment sale the client must pay a minimum of 15% of the value of the Household Cabinet on delivery of same. Likewise he must include in his account the expenses of clearing and settling the drafts.

On easy payment sales of 18 months 12% will be charged on the total sum of the transaction less cash payment.

On 12-month sales the surcharge will be 8%.

On 9-month sales the surcharge will be 6%.

On 6-month sales the surcharge will be 4%.

To wholesale middlemen a maximum discount of 25% will be allowed. The discount for the resellers of one or a small number of Household Cabinets will be 20%.

In the case of an exclusive dealer the discount may be increased to 30%.

Under no consideration whatsoever shall a larger discount than 10% be conceded to the public for prompt payment, cash payments, etc.

Commercial Refrigeration. — For commercial installations the maximum time payment which can be allowed is 18 months in accepted drafts, and the first due date is payable, at the latest, 30 days after the installation has commenced to function.

Whenever possible the payments should be for the same amount.

In order to qualify for 18 monthly easy payment terms, the client must make a first cash payment equal to 25% of the installation when the latter functions, or otherwise an acceptance for the referred amount, payable at 90 days sight, on signing the contract.

The interest chargeable will be the same as that ruling for the Household Cabinets.

On the estimates presented, including those based on cash payments, no reduction exceeding 10% will be allowed on the budget price.

It is understood that the budgets presented in payment form, which do not state payment terms, shall be paid in cash at 90 days sight as a maximum time limit after the installation is working. In normal cases, when granting easy payment terms for the offers put forward, the interest will be

charged on the prices of the referred estimates or offers, and it is understood that it will not be taken as included in the budget price.

Every fortnight business men engaged in the refrigerating trade will hold a meeting in order that they may become better acquainted personally. The referred meetings, conferences, or "heart-to-heart" talks, should enable them to eliminate or neutralize the influence caused by the competition resulting from the exaggerated offers which come from both clients and the salesmen. In the course of these meetings, due advantage would be taken of the opportunity to investigate cases in which previous agreements had not been strictly observed, and also to hear the explanations of alleged transgressors.

The associates undertake to impose serious rules to which their employes and salesmen will rigidly adhere, and will forbid their employes and salesmen to make undesirable or untruthful comments regarding competition.

Members of the association include:

Anglo Espanola de Electricidad—Cortes, 525—Servel.

Anonima Rifa Anglada—Paseo de Gracia, 21-23—Frigidaire.

Auto Electricidad—Diputacion, 234—Brunswick.

M. Ribalta—Diputacion, 258—Norge.

Refrigeracion S.A. — Consejo de Ciento, 471—York.

Suministros Electricos—Fontanella, 14—Westinghouse.

Hispano Nanuk—Rocafort, 98-100—Nanuck (Spanish).

Novitas Bori—Corcega, 196—Baker.

Bastos y Cª.—Claris, 19—Ate (German).

Vivo, Vidal y Balasch—Cortes, 589—Stewart-Warner.

Hans T. Moller—Cortes, 435—Sabroe (Danish).

Sr. Dn. Jaime Marinel. 10—Creu, 63 (Badalona) Marinello (Spanish).

Erebus S.A.—Av. Maristany, 27—Ice-O-Matic.

Oyarzun y Cª—Rbla. de Cataluna, 81—Kelvinator.

Electro-Lux—Rbla. de Cataluna, 75—Electrolux (Swedish).

Siemens Ind. Electrica—Via Layetana, 47—Protos (German).

I. Codina—Napoles, 190—Crosley.

S.I.C.E.—Paseo de Gracia, 29—General Electric.

E. Clapes—Mendez Nunez, 18—Jay (Spanish).

Aniceto Negre—Calabria, 106—Negre (Spanish).

Luis Crhistensen—Manso, 52—Crhistensen (Spanish).

Federico Streich—Via Layetana, 21—Borsig (German).

Equipos Bosch—Mallorca, 281—Bosch (German).

Jose Petit—Rbla. de Cataluna, 96—Sanitary.

* * *

Et Tu, Bullfighters?

Mr. Rifa we found to be a fine gentleman, indeed, and a reader of and booster for REFRIGERATION NEWS from 'way back.

"It's the only publication I know of that's really helpful in this business," he declares. "The Frigidaire factory men say the same thing, too. We take two subscriptions."

Although Saturday afternoons seem to be sacred in Spain, Mr. Rifa graciously took the rest of the day to show us around and confab.

Next day he suggested we go to the regular Sunday afternoon bull fights at the Barcelona arena. He had once taken President E. G. BIECHLER to a bull fight, he said, and Mr. Biechler seemed to get a big kick out of the proceedings.

Sunday afternoon came, cloudy and dreary, which seemed to fit in with the general atmosphere. (When you can't even get a cuppa cawfee or a sandwich because of a strike, things don't seem so sunny.)

Mr. Rifa arrived in a cab, and we went out to the huge amphitheater where the bullfights are staged. But no fights—called off on account of inclement weather, they said.

We took a few pictures of the ring, and snapped an authentically costumed *matador* when he arrived in state in a rubber-tired hack. After that Mr. Rifa took us to a soccer football game as a consolation measure. But what had been our one chance to see a bull fight had passed.

Next day we learned that the threatening weather was simply a dodge. Bullfighters Local No. 22 had called a *strike*, in sympathy with their comrades in Madrid, who were protesting in the same manner over the employment of bullfighters from Mexico.

Life has been just one strike after another on this trip. But this one, we thought, was funnier even than the taxi drivers in Bombay who were striking for *less* pay.

* * *

Spain by the Ears

Mr. Rifa comes from a distinguished family, which operates cotton mills, a lamp works, a radio broadcasting station, and controls considerable property.

But the Frigidaire business is all his own. Anonima Rifa Anglada occupies extensive quarters at Paseo de Gracia, 23, and maintains a highly modernistic showroom at Paseo de Gracia, 21, Barcelona. Also there's a branch at Madrid.

All told Anonima Anglada has 86 employes, 21 of whom are specialty salesmen working the Barcelona territory.

Starting out as a Barcelona dealer for Frigidaire in 1929, Mr. Rifa become "distribudora" for Spain in 1933. During that time his organization has sold more than 4,000 Frigidaires, of which about 40% have been for commercial installations.

Last year Anonima Rifa Anglada sold 1,219 Frigidaires in Spain. According to Mr. Rifa's figures, he gets *more than half of the total* refrigeration business in Spain.

This comes as a result of defying the that-may-be-all-right-somewhere-else-but-it-won't-work-here theory. For example: Mr. Rifa's salesmen *canvass* for prospects and business—something which practically everyone says won't work in Europe.

Moreover, Frigidaire in Spain follows the regular formula: dealers, subdealers, salesmen, supervisors, divisional managers, quotas, conventions, sales contests, direct mail, and regimented enthusiasm. It all sounded like Old Home Week to us, and we almost broke down and cried from sheer nostalgia.

Salesmen work on a commission basis, getting from 6% to 12%, according to a complex, cumulative system. Dealers get 30, 25, and 20%; and "spotters" receive 10% commission.

In his office Mr. Rifa has a map of Spain dotted with thumb tacks representing dealerships. Every huddle of masonry in the country appears to be covered.

Among the interesting facts he reported was that he does a nice business in Gibraltar—one romantic spot we've missed on this trip. And he confirmed the report of PHIL COPELIN, Frigidaire regional manager for Spain and the Near East (whom we met in Port Said) that Algiers is a red-hot market for air conditioning—the very best of any Mediterranean country, and probably one of the best in the world.

* * *

Senora De Kelvinatora

Head of the Kelvinator organization in Barcelona is a woman, Senora MERCEDES FIOL COLOMER.

Senora Colomer speaks no English, nor I any Spanish. So we could do little but smile at each other. She is most gracious; and, judging from the tone of a couple of telephone conversations, must be efficient and competent in any man's league.

Her showroom and office were spotless, and neatly arranged. Toledo scales also were on the floor.

Others around town assured us that a woman running a business in Spain is as rarely found as a Protestant church.

Nevertheless, Senora Colomer has been running the Barcelona branch (her title is Apoderada de la Sewrsal de Barcelona) of the Spanish Kelvinator distributorship for five years.

This distributorship, R. Oyarzun y Cia (S. en C.), had headquarters in Madrid, with other branches in Bilbao, Valencia, Sevilla, and Lisboa. Senor ALVARO ALVEREZ was director of the Madrid office, and Senor ROMAN OYARZUN Y OYARZUN is the owner. Madrid address was Paseo Imperial 10, Edifino Propio.

Kelvinator and General Electric are the only American refrigerating machines distributed in Spain through concerns with headquarters in Madrid. The rest all work out of Barcelona.

General Electric's agency is the Sociedad Iberica de Construcciones Espanolas, Calle Zurbano No. 14, Madrid. Senor P. GONZALEZ-BUENO is the general manager, and Senor MELENDRERAS is manager of the refrigeration department.

I. CODINA, Crosley distributor, was just about the "hottest thing in town" last year. He came into the market with a bang, having imported *five hundred* refrigerators as a starter.

His competitors smiled, shook their heads, and said: "Well, one is born every minute."

But he sold these 500 Crosleys so fast it made his competitors' heads swim, and ordered more. "Crosley is our toughest competition," admits Frigidaire's Senor Rifa. At present, however, Senor Codina is stymied by the currency control, like many another.

ANGEL VIVO is "director gerente" (general manager) of Vivo, Vidal y Balasch, S.L., Cortes, 589, Barcelona —distributor for Stewart-Warner refrigerators and radios.

This is a big concern, dealing in engineering and industrial supplies, wire and cable, paints and insulations, with branches in Bilbao, Madrid, and Valencia. Senor Vivo took us for an inspection tour of the Barcelona establishment and it really covers a lot of floor space.

"Stewart-Warner makes an excellent refrigerator," said Senor Vivo. "We have only praise for the product and the organization. But the present policy of the Spanish government in regard to currency payments abroad is going to make it difficult to maintain the relationship.

"At present we have on deposit some $35,000 credited to the account of the Stewart-Warner Corp., but unfortunately they have been unable to collect a penny of it. So they don't feel constrained to ship us any more goods until those circumstances are changed, nor do I blame them."

He then showed us a really handsome refrigerator, resembling somewhat a cross between a Kelvinator and a Norge, externally. It was the Jay refrigerator, manufactured in Bilbao, Spain.

A 6.3 cu. ft. Jay refrigerator retails for 1,500 pesetas, as compared to 1,850 pesetas for a 4.5 cu. ft. Stewart-Warner.

Senor Viva indicated that he had no great confidence as yet in the performance of the Jay, and that he would much prefer to sell the Stewart-Warner, which he knows from experience won't give him troubles.

But then, he shrugs, what can one do?

She Sells Kelvinators in Spain

Senora Mercedes Fiol Colomer, Kelvinator dealer in Barcelona, visits with the author—using sign language and smiles.

He is also selling the Fretfort ice refrigerator, made in Barcelona. This, too, is a handsome box. Apparently the Spaniards know how to design and build cabinets.

Vivo, Vidal y Balasch, S. L., manufactures its own radio cabinets, into which the Stewart-Warner chassis is installed.

* * *

Loyal Confidence

In full accord with Senors Rifa and Vivo that Spain is a country with a great future, despite present difficulties and inconveniences, is P. LLORENS GISPERT, director gerente de Auto Electricidad, S.A., Disputacion, 234, Spanish distributor for Carrier. It's a rich country, he says, and is a potentially productive market for technical development.

"Spain needed reformation badly," he avers. "When all of our current difficulties smooth out, it's bound to be a fine country in which to live. So we business men find it easy to accept current maladjustments philosophically."

Thus far Auto Electricidad has installed two air-conditioning jobs in Spain, one in a cinema (motion picture theater) and another in a restaurant.

"We can't touch a lot of potential business," Senor Gispert states, "because Carrier is so very strict. Everything must be installed just right. We agree with that policy, for we know that in the long run that will build good will and a sound, permanent business for us in the future."

Auto Electricidad also has household refrigerators for sale. In cabinets of its own manufacture Westinghouse units have been installed. Kellogg machines are to be tried out in these cabinets later this year. A 4-cu. ft. job sells for 1,900 pesetas.

Long terms bother Senor Gispert. People with the least capital, he complains, grant the most extended terms.

Outside of Frigidaire, which utilizes the facilities of General Motors Acceptance Corp., Spanish distributors have to finance time payments themselves, through their none-too-willing banks.

Financing companies do not operate in Spain.

* * *

War Front News

With latest press dispatches from the Spanish revolutionary front picturing bomb-torn cities, scores of thousands dead and wounded, and normal business activity paralyzed while the status of foreign interests remains in jeopardy, one might expect to find export managers of American refrigeration companies doing business in Spain wringing their hands as a valuable market goes up in the smoke of battle. Not so in at least five cases, according to export division heads who answered queries from the author regarding the status of their interests in Spain.

From headquarters of Crosley, Westinghouse, Frigidaire, Carrier, and Sparks-Withington comes hopeful news.

Lack of information from their distributorships in the war zone, where thousands of electric refrigerators are stored and bank deposits remain frozen, has caused considerable concern in home offices, but a uniformly optimistic spirit prevails regarding the export trade in American refrigerators when peace is once more established in the warm land of gay caballeros and softly-strummed guitars—a naturally receptive market toward refrigeration in all its branches.

A. G. LINDSAY, manager of Crosley's foreign division, states that he has not been able to contact his Barcelona distributor for three weeks, and that from last communications it was feared that the dealer's stocks had been confiscated.

"As far as our distribution is concerned," Mr. Lindsay says, "when I was in Spain last year, I got a hunch that something more or less serious might happen in that country, even if I had no clear conception just where and how the lightning would strike. At any rate, I took immediate steps last September to retreat from what looked to me an overextended position in Spain. We gradually saw that all our outstandings were paid up and placed all new business this year on a basis of cash in this country.

"Of course, we have undoubtedly lost some business by doing so, but

on the other hand, we now have suffered no loss whatever in Spain, and look forward to the future with equanimity.

"It is true that we have a few thousand dollars in pesetas outstanding in Barcelona, but these outstandings are really theoretical, as we have sufficient dollar credits established by our distributors in our favor over here to permit us to protect the unremitted drafts in Barcelona."

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Westinghouse

Although lack of contacts with distributorships is also reported by R. R. MASSEY, manager of the merchandising division of Westinghouse, he does not feel that refrigerator stocks have been destroyed on a large scale during the war.

"My own guess is," says Mr. Massey, "that perhaps there has not been a great deal of destruction of such products and activities, as the interest of each faction in Spain for the present is more concentrated on weapons of war such as can be turned into transportation and the equipping of military personnel.

"Consequently," Mr. Massey goes on, "our position at the moment as an American exporter to Spain is to sit tight, try to retrieve whatever we can on present assets in that country and observe the direction of the wind after the civil strife comes to an end."

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Sparks-Withington

H. O. McCLUMPHA, export manager for Sparks-Withington, states:

"Unfortunately, at the beginning of the difficulty, we had a shipment on the water; and instead of permitting it to go forward to destination we cabled instructions to have the consignment discharged at Lisbon, where it is now being held in a bonded warehouse.

"The above represents the only difficulties that we have encountered; and we have suffered no actual losses of confiscation, damage or any other losses other than, of course, the fact that we have a considerable amount of funds frozen in the bank. In other words, we accepted a deposit of Spanish currency in liquidation of our draft, and are now awaiting the pleasure of the exchange control board to issue the necessary authorization for the remittance of the dollar exchange."

Mr. McClumpha further says that despite present conditions, he has always considered Spain an excellent market for electrical appliances, and feels that the post-revolutionary trade will be equally gratifying.

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Carrier, Frigidaire

H. R. COATE, advertising and sales promotion manager for Frigidaire, and HERBERT L. LAUBE, vice president of Carrier, replied that they are unable to contact their representatives in Spain, and that shipments were at a standstill, but neither one indicated any great worries about the eventual future of the electric refrigeration business between American manufacturers and Spanish distributorships.

Barcelona, capital of the recently seceded state of Catalonia, is the center of business interests of two American refrigeration companies. One export man replying to the NEWS queries stated that his firm had about $150,000 in assets frozen in a Barcelona bank. Another believes that business in the Catalan republic may be impeded for several months following the conclusion of the war, due to the fact that Barcelona's warring Communist factions will have to be subdued by whichever side emerges victorious from the present war.

The province of Catalonia decreed confiscation of all private property in the fall of 1936, thus virtually seceding from Spain. Catalan troops expelled the rebel forces early in the conflict, and if Spanish loyalist armies are defeated, it is felt that Catalonia will declare itself an independent soviet state.

Observers state it is quite possible that, if rebel forces prevail, they will attack and endeavor to subdue Catalonia as soon as they have conquered the loyal government military divisions.

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Property in Danger

Possibility that American firms having property in Barcelona and other sections of Catalonia will have their property confiscated or destroyed during the upheaval is felt in several quarters.

Previous to its secession from the Spanish Republic, Catalonia had enacted a series of social and agrarian reform laws of its own and conducted its own affairs with little interference from the Madrid government. In seceding, the Catalan Economic Council wiped out private capitalistic possessions, and turned the province over to "the workers," assuming for itself the powers of regulation of production, monopoly on foreign commerce, collectivization of rural property for later development by the peasantry, collectivization of all big industry, public utilities, and transportation systems, control of cooperatives, control of banks, revaluation of property, commodities, and produce, and establishment of a single tax.

Such far-reaching changes must have a considerable effect on such American concerns as General Motors and the Ford Motor Co., both of which have extensive interests in and around Barcelona.

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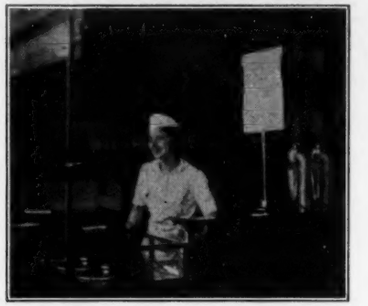
Ice Cream in Favor



Ice cream is just beginning to become popular commercially in Spain. Here is an open-to-the sidewalk ice cream cabinet in Barcelona.

Slow Recovery

Some foreign observers for American companies, the query by the NEWS has revealed, hold the opinion that whichever faction wins in Spain, it will take a long time for the country to get underway from a commercial standpoint.

A precarious financial situation is expected to develop at the end of hostilities, according to one answer, and doubt is expressed whether there is a man in Spain who is enough of a Hitler or Mussolini to quell revolts which may break out after the main controversy is settled.

This writer feels that a continuation of Spain's present Communistic government will prove a hardship on the shipping of electric refrigerators freely into Spain, and that Spanish industry will be unable to cope with the problems of building its own electric refrigerators for some generations. Italy and Germany, Fascist countries, sympathize with the revolutionists, while France and Russia, socialistically and communistically governed, are in sympathy with the loyalist, or Red regime. A clear-cut decision for either faction will produce corresponding reactions in these other countries.

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New Construction

Another export man notes that following the war a great deal of new building will have to be undertaken throughout Spain, with its consequent modernization of old housing and business facilities, and the opening up of new markets for electric refrigeration.

He feels that the revolution will be productive of increased business for American refrigerator, radio, and home specialty manufacturers when the Spanish people set about the task of rebuilding destroyed cities, homes, and buildings.

One of the export men stated that he confidently believed the rebel armies would win the war, and that the worst part of the conflict will be ended by the middle or end of next summer.

He also expressed the opinion that instead of setting Spain back economically for a generation, the effects of the civil war will be quickly overcome; and that business, even during the next two or three years, will be "very excellent."

Exchange restrictions, which now freeze American capital in Spain, and Spanish deposits on American drafts, will soon disappear after the end of hostilities, he hopes, and Spanish-American business in the future will be on the basis of free exchange without quotas and payment restrictions.

Good Future

Another exporter writes that his company tried manufacturing refrigerators in Spain several years ago, and gave the business up as a bad job.

He feels that the refrigeration industry in Spain must continue to rely on American manufacturers for its sources of supply, and therefore American refrigeration men may expect a good market in Spain, as soon as fighting ends.

Sales promotion, he notes, is difficult in Spain due to the general commercial backwardness of the people, with Barcelona being the most progressive section, while Madrid, the capital, is the most backward. If the Fascist, or rebel, element wins, and Spain comes under the rule of a hard-fisted dictator, according to one man, the electric refrigeration business will boom, due to probable absence of tariff restrictions under that form of government.

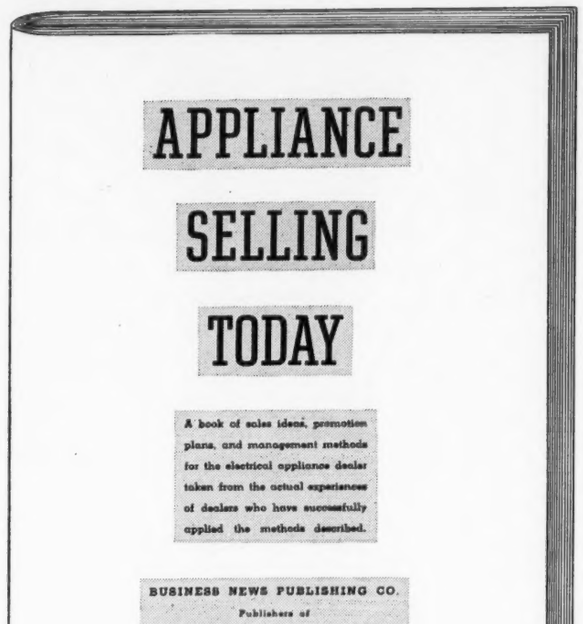
On the other hand, if the present Communistic rule prevails, he feels that new tariff barriers will be erected which will preclude any possibility of a favorable trade balance being established.

It is the opinion of another correspondent that if other European governments kept out of the conflict and allowed the Spaniards to settle their own "differences," the present war would have been settled long ago.

Although one export man jokingly offers to sell "some pesetas at a discount" all replies to the queries regarding the situation in Spain reflect a policy of watchful waiting rather than concern or despair over the war-torn country.

Export men seem to feel that, like many other foreign trade difficulties, the situation will eventually remedy itself.

APPLIANCE SELLING TODAY—A manual of sales ideas and promotion plans


APPLIANCE
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TODAY
A book of sales ideas, promotion plans, and management methods for the electrical appliance dealer taken from the actual experiences of dealers who have successfully applied the methods described.
BUSINESS NEWS PUBLISHING CO.
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AIR CONDITIONING & REFRIGERATION NEWS

Manual No. R-1

"APPLIANCE SELLING TODAY" is edited exclusively for the appliance distributor, dealer, and salesman.

This 128-page book is packed with hundreds of sales ideas, promotion methods, and merchandising plans tested and proved in actual use by dealers in all parts of the country.

"Appliance Selling Today" was written out of the actual experiences of electrical appliance dealers of all types and sizes, in all parts of the country. The reports show how such dealers have successfully applied various sales and management methods.

The records were compiled by staff members of AIR CONDITIONING & REFRIGERATION NEWS and its field correspondents, but the ideas and thoughts presented came from appliance dealers.

The editors of AIR CONDITIONING & REFRIGERATION NEWS believe that "Appliance Selling Today" is of greatest value to the dealer right now, for the reason that in no other period of appliance selling history has the dealer been so much "on his own."

Merchandising operations of the retailer are no longer so closely guided by the manufacturer, and intra-industry agreements have cut down on the amount of sales helps the manufacturers can offer in the way of contests and the like.

Thus, the dealer has been left pretty much to figure out his own sales and promotion plans and to devise schemes to keep his selling operations at a high pitch. It is the hope of the editors that the description of tested methods given in "Appliance Selling Today" may be of some assistance to him in working out plans to fit his particular needs.

Manual R-1 contains 128 pages, size 8½ x 11, and costs $1.00 in the United States. (See page 63.)

. . . FRANCE

Air Conditioning & Refrigeration

Despite increasing competition from local manufacturers, the jitteriness of the franc, and the maze of quotas and import restrictions, France has been for more than a decade one of the two or three leading markets for American refrigeration products.

If this weren't true, most American firms, confronted with the quotas and all the red tape they involve, would probably take one or two looks and say: "T'ell with it."

But any market so good as France cannot be ignored, no matter how annoying or irritating it may be to do business there. Herewith is presented a detailed study of the quota system, French merchandising procedure, and French buying habits.

Four Other Fellows

With all his mastery of food and its preparation, the Frenchman might never have learned about *refrigeration* had it not been for Americans and other outsiders.

Today France is an excellent market for American refrigeration products—exceeded only by England and South Africa. Two or three years ago it was *first* among foreign markets for American refrigeration; but in the interim French manufacturers have become increasingly important in their own national picture.

Nevertheless, it was not from Frenchmen, really, that I learned about refrigeration in France. It was from four other fellows: HARRY GRANARY (General Electric), an American; EDGAR CARMEL (Frigidaire), a Canadian; Baron LUIGI PARILLI (Kelvinator), an Italian; and HARRY NOORDBERG (Melchior, Armstrong, Dessau), a Dutchman.

Each of these gentlemen is virtually the head man of all European refrigeration operations for his company. Baron Parilli and Noordberg have the title of European Manager; and whereas Granary and Carmel have no jurisdiction over European countries in which branches or affiliated companies operate (General Electric, for example, has affiliates in Germany, Spain, and Italy), the Paris office is considered the key to the continent, and the Paris manager the senior official.

Of course many other men contributed to the knowledge of the French refrigeration situation which will follow, men who will be named as the story progresses. But it is to this quartet of non-Frenchmen, perhaps, that we owe the most.

* * *

Harry Granary, Gentleman

To HARRY GRANARY, who manages General Electric refrigeration sales for most of the continent of Europe out of the Paris office, should go an especially large and fragrant bouquet. I had met him previously in New York, and took the liberty of naming his office as my European address.

Harry is an exceedingly busy fellow, yet he insisted that everything he had was mine—his office, his clerical help, his apartment, his friends, his guidance, his time, and (best of all) his knowledge.

Even more gratifying was his attitude of giving me the utmost freedom whilst offering me all this help. He and his facilities were there if I wanted them; but he scrupulously avoided monopolizing my time and attention.

Being a bachelor himself, Harry appreciates how important freedom of action and independence can be to another bachelor; and that freedom is especially dear to a *reporter* who is trying to get a complete and unbiased picture of a particular situation.

Mr. Granary was born and educated in Louisiana; but has done most of his work in foreign fields.

He entered the service of the International General Electric Co. shortly after leaving college, and was sent at once to the West Indies.

Later he was moved to Paris, where he has remained for many years.

He is in all respects a *gentleman;* although his competitors may tell you that he is a sharp fighter, and gets business grimly.

'The French They Are a Funny Race, Parleyvoo!'

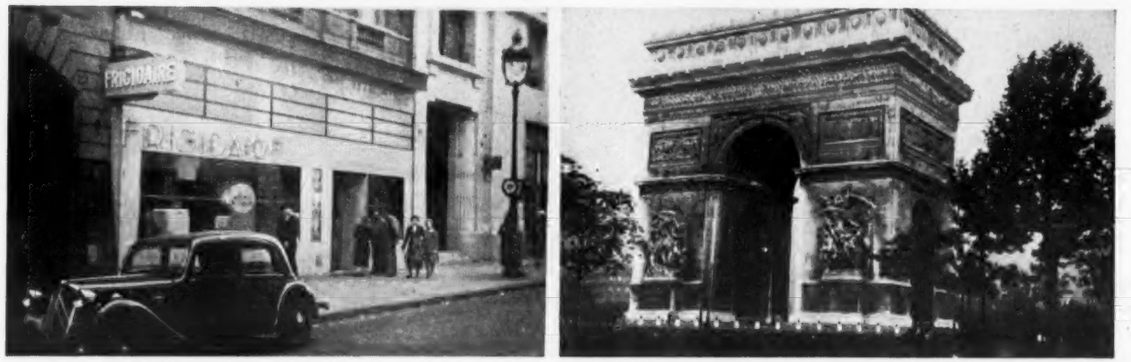
The manufacture and sale of ice has never been much of a business in France. Even in Paris there is no delivery to homes. Big commercial users can get regular deliveries, but not households. If you really want a chunk of ice for your kitchen, you must drive 'way out to hellangone and get it yourself.

Up until the advent of the American electric refrigerator, most French housekeepers attempted to preserve their food in various types of window boxes, grouped generically under the term, *garde a manger.*

Apartment houses generally have these built in, and underneath each kitchen window you'll find vents to the outside, through which cool air—also dirt and filth—may pass into the *garde a manger.* (See pictures.)

French servants don't like to see an electric refrigerator come into the house because it cuts food bills, and they get commissions on everything they buy from stores. (Servants get

Two Fine Sights in La Belle Paree



At the left, the Frigidaire showroom; at the right, the Arc de Triomphe—two of the finest sights in Paris.

their employers going and coming—commissions from shopkeepers on the one hand, a share of the food to take to their own homes on the other.)

Discounts are the bane of a dealer's existence. The French are world-famed for their thrift and niggardliness, and it's no joke, either. No Frenchman ever expects to pay the list price. He will haggle for weeks until he gets what he thinks is a flattering discount. It's a matter of pride with him.

Of course he doesn't get his refrigerators for less money than members of other races. Fact is, he's likely to pay more; for the dealer simply ups the list prices to a point high enough to take care of the discount which the most persistent haggler may succeed in obtaining. Before devaluation of the franc (at the time I was there) a 4-cu. ft. box listed at the equivalent of $255.

It's annoying, of course, to do business that way. It's even more irritating to find that the purchaser of a refrigerator will tell his friends that he paid less for it than he actually did. The French do so love to brag about the bargains they get that all too often they lie about the purchase price—which, of course, gives the next haggler a goal to work toward.

Time payment sales are gaining in popularity, although they still do not account for so heavy a proportion of the sales as in America. Customary formula is 20% down, and the balance in payments spread over 18 months or two years. The dealer must finance his own paper.

Long-term guarantees are not all-important in France either. General Electric offers a straight four-year guarantee, at the end of which two years additional are extended to the owner upon payment of 400 francs (which figure has undoubtedly been upped since the recent devaluation of the franc).

According to Mr. Granary, General Electric dealers make money on this contract for an extra two years. The French climate is mild, the servants or housewives insist on shopping for food every day and hence don't load up the refrigerators, and service troubles are relatively few.

Newspaper advertising is little used by distributors in France. Inasmuch as the papers are principally political flag-or-rag-wavers, with scant reputation for truth telling, buyers seem to attach little importance to advertisements placed therein. (The Paris edition of the *New York Herald-Tribune*, published in English, is an exception to this rule).

Best method of promotion, all distributors agree, is exhibiting at trade fairs, of which there are a number running at all times in various parts of France.

The writer went out to the Foire de Paris during his stay, and found a Little World's Fair in progress, simply crammed with refrigeratoir exhibits. These were as attractive and eye-compelling as any at A Century of Progress, Dallas Centennial, or Great Lakes Expositions, and were drawing a steady flow of prospects. (See pictures).

There are scads of French refrigeration manufacturers. They come and go with the wind, some of them eking out a living from the assembly and sale of perhaps 30 units a year! Like the Australians, the French manufacturers are rank pirates, and hesitate not at all to copy the design of any part which they may fancy on an imported unit.

In some places you hear the comment that Melchior Armstrong Dessau is "the biggest manufacturer in Europe." This is not literally true, of course, for this American exporting firm has no factory of its own. But Mr. Noordberg does supply parts and materials to a vast number of manufacturers in France and elsewhere on the Continent, which parts and materials are assembled by the local fabricators.

Although all of the American firms will tell you that the French make poor refrigerating machines, they do admit that the French manufacture good cabinets. Fact is, the American importers buy French cabinets themselves.

Tariffs are based on weight (so many francs per kilometer, dependent upon an intricate series of variables), and hence it becomes almost prohibitively expensive to import either commercial or household cabinets.

In Paris refrigerator users may take advantage of a special power rate for electrical current which amounts to about three cents per kilowatt. Special wiring is required on the installation in order for the user to get the benefit of this rate.

The same rate is also available to users of ranges or washing machines. Comparatively few American electric ranges are sold in France, most of this business going to French manufacturers, with German and Dutch makes runners-up.

French, German, and Dutch radios also sell well in competition with American brands.

A good market for washing machines exists, because laundry is expensive in most French cities. (The writer paid about 62 cents per shirt, 24 cents for a pair of sox—although the franc has since fallen considerably, and those prices undoubtedly are lower now.)

* * *

Dat Ol'Dabbil, Quota

In order to protect French manufacturers, the government of France does not stop with fairly high tariffs. It imposes *quotas* on importers. At present, these quotas are based upon imports in 1934.

If the Paris Frigidaire organization, for example, imported so many kilograms of refrigeration equipment in 1934, it can import only a certain percentage of that amount of equipment (measured by weight) in 1936.

Now it so happens that Frigidaire and General Electric had exceedingly good years in 1934, and hence the quota restrictions don't bother these two firms much. But concerns which happened to have an off season in 1934 fare pretty badly. And firms which had no dealer representation in France at that time, like Fairbanks-Morse, are totally out-of-luck.

Some French observers are of the opinion that the government's quota decree, together with other measures apparently conceived to protect French national enterprise and industrial independence, will be made, sooner or later, into the permanent trade control structure of the coun-

French Business; Paris Fashions

Baron Luigi Parilli (right), Kelvinator European manager, instructs his Paris dealer before leaving on a motor trip to Belgium and Holland. The two gentlemen are standing before the gates to Baron Parilli's sumptuous Paris home, the interior of which is the most expensively furnished dwelling in which the author has ever lunched. Picture on the right shows a recent Parisian fad in clothes: a young man and woman dressed in suits of precisely the same material and cut, with matching scarves. Everywhere in Paris one saw couples so attired.

try, in the hope of relieving emergency conditions and hastening permanent prosperity.

Observers are generally agreed that local independent and syndicated refrigerator firms cannot supply more than a fifth of France's annual requirements. So, most believe, the authorities should allow the issue of public health to prevail over international trade adjustments, and lift the quota restrictions.

Since American-made equipment comprises fully 70% of the imports into the country, representatives of American firms are, naturally, most concerned with having the quota restrictions lifted.

According to my informants, the story behind the adoption of the quota runs about as follows:

The "Chambre Syndicale des Constructeurs de Materiel Frigorifique Francais et Industries Annexes," comprising 15 enterprises representing about 30% of the French industry proper, prevailed upon the government to issue a quota decree. In so doing, the "Chambre Syndicale" acted without the authority of the group of 60 French national subsidiary enterprises representing the remaining 70%, who directly and indirectly depend on the permanently increasing imports of foreign, and especially of American, refrigerator equipment.

The government, unaware of this situation, issued the following interlocutory decree on May 15, 1935, as per publication in the *Journal Officiel*, p. 5275 of May 17, 1935:

MINISTRY OF COMMERCE AND INDUSTRY

Importation of Refrigerator Apparatus.

The President of the French Republic, in view of Article 17 of the Customs Code; on the report of the president of the council, the minister of commerce and industry, the minister of foreign affairs, and the minister of finance; the council of ministers in agreement decrees:

Art. 1. By special decree and for the time being, the importation of the goods hereinafter mentioned can only be effected according to the terms determined by interministerial decree:

Ex. No. 524 bis M.—Electrical machinery and electro-technical apparatus for domestic use, and electro-mechanical small tools: domestic refrigerator machines, scouring machines, food mixers, etc.

527 bis.—Refrigerator apparatus.

Art. 2. The president of the council, the minister of commerce and industry, the minister of foreign affairs, and the minister of finance are instructed, each in his own department, to execute the present decree.

The minister of foreign affairs, the minister of finance, the minister of commerce and industry, in view of the decree of May 15, 1935, which has determined for the present the importation of refrigerator apparatus, decree:

Art. 1.—The importation of refrigerator apparatus, revised by the decree of May 15, 1935, will only be able to be effected, until further notice, on the production of individual authorization papers of importation issued by the customs authorities according to the terms given and advised to importers.

The amount of these authorizations will be equal to the quantities which the importers can prove to have imported during the corresponding month in 1934.

Goods which can be proved to have been dispatched specifically to France prior to the date of publication of the present decree of the *Journal Officiel* will be allowed to be imported, without special authorization.

Art. 2.—The councillor of state, director of customs, is charged with the execution of this present decree.

The decree was to be applied subject to the following by-law likewise published in the same issue of the *Journal Officiel*:

NOTICE TO IMPORTERS
Importation of Refrigerator Apparatus

The importation of refrigerator machines for domestic use (Ex. No. 524 bis M) and of refrigerator apparatus (No. 527 bis) is subject to

Crowds Throng Modernistic Refrigeration Exhibits at Annual Paris Exposition

These crowded exhibits were among the two dozen or so put up by Parisian manufacturers and distributors at the annual Foire de Paris in May and June of 1936. In the center is that of the Paris branch of the International General Electric Co., which uses the trade name, "Frigeco" (abbreviation of French International General Electric Co.) for its refrigeration products.

the production of special authorization papers on importation issued by the customs authorities on the proposal of the Confederation Generale de la Production Francaise, 6, rue de Messine, Paris, to whom all requests for authorization of importation should be addressed.

Goods which can be proved to have been dispatched specifically to France prior to the date of publication of the present decree in the *Journal Officiel* will be allowed to be imported without special authorization.

This established a temporary quota for refrigeration material imported into France under No. 524 bis M. and No. 527 bis of the French Customs tariff on the basis of the monthly importations of 1934.

It invited the American government to designate a committee to discuss the matter with a committee appointed by the French government. The Refrigeration Division of National Electrical Manufacturers Association, at the request of United States Department of Commerce, appointed the French Nema manufacturers committee to represent the American electric refrigeration industry before the French Chambre Syndicale in all matters pertaining to this quota and any possible derivations.

For 524 bis M. (Household cabinets), administration of the quota was placed in the hands of the "Comite Interprofessionnel des Industries Electriques" (CIIE) who delivered up to December, 1935, to the old importers monthly import licenses for quantities up to what they imported in the corresponding month of 1934. The committee obtained from the Ministry the authorization to grant to new importers—those that had not imported in 1934—import licenses up to a maximum of 5% of what had been imported in 1934, also on a monthly basis.

For 527 bis (Commercial machines), the administration of the quota was placed in the hands of the "Comite Interprofessionnel de la Mecanique" (CIM). Before granting any license, the Committee asked the Ministry for instructions regarding new importers and was told to give the old importers only 85% of what they had imported in 1934; the balance was to be used for taking care of the new importers. In case the balance was not fully taken up, the remainder was to be allocated on a pro rata basis to the old importers. The CIM, up to December, 1935, granted monthly and individual licenses according to these instructions.

A series of conferences was held during 1935, and efforts were made by the American importers' group to arrive at a permanent understanding with the French Syndicate in the direction of a joint working arrangement which would guarantee to the members of the French Syndicate a steadily increasing share in the business and, on the other hand, would not jeopardize the heavy pioneer investment made in this market by the American importers and would not deprive this market of their intrepid scientific promotional sales activities and the annually recurrent propaganda disbursements aggregating for this group roughly 5 million francs.

The suggestions of this group seemed to meet with a favorable reception by the representatives of the French Syndicate. A general plan was outlined which would bring the importers and the French group together in a joint organization representing not less than 75% of the French market, to which the government's sponsorship was to have been invited.

* * *

More on the Quota

While independent French manufacturers and members of the Nema French organization were engaged in their efforts to arrive, with Syndicate manufacturers, at a more equitable arrangement regarding the quota, the *Journal Officiel* reported, in its Dec. 1 issue, that for 1936 the quota would be a quarterly one, with the 1934 imports as its basis.

(Setting 1934 imports as the basis, however, did not mean that the quota would be equal to it, our informants report. According to them, the basis constitutes a mere reference figure, to be used in establishing the actual quota.) Quota figures for the first quarter of 1936, announced at the end of December, were set at 59,850 kgs., for household refrigerators, and 54,700 kgs., for commercial equipment.

It was also announced that these figures might be increased by 300%, at the maximum.

Shortly afterward, however, the figures for commercial equipment were altered, the Ministry of Commerce informing the CIM, administrative agency, that the basis for them would be the amount that had been

Table 1—Imports into France, First Five Months of 1935

Country	Jan. '35 No.	Jan. '35 Value (1,000 fr.)	Feb. 35 No.	Feb. 35 Value (1,000 fr.)	March '35 No.	March '35 Value (1,000 fr.)	April '35 No.	April '35 Value (1,000 fr.)	May '35 No.	May '35 Value (1,000 fr.)	Total 5 Months '35 No.	Total 5 Months '35 Value (1,000 fr.)
Germany	5	12	35	52	5	7	148	152	160	169	353	392
Austria	1	4	....	....	...	1	....	....	....	....	1	5
Denmark	1	2	....	....	...	....	....	....	2	9	3	11
Great Britain	3	4	....	....	...	....	....	....	....	....	3	4
Italy	...	1	....	....	...	....	5	12	1	4	6	7
Poland	...	....	....	....	...	....	1	2	....	....	1	2
Sweden	14	43	1	2	5	17	15	48	13	32	48	142
Switzerland	5	16	3	9	23	19	1	2	7	12	39	58
Belgium	2	3	....	....	3	3	1	1	1	2	7	9
United States	454	479	248	281	221	252	1,073	1,229	1,760	2,239	3,756	4,480
Totals	485	564	287	344	257	299	1,244	1,446	1,944	2,467	4,217	5,120

Table 2—Domestic Refrigerator Imports, 1934-35

	During 1934 No.	During 1934 (1,000 frs.) Value	11 Months, 1935 No.	11 Months, 1935 (1,000 frs.) Value
Germany	486	717	502	668
Austria	1	1	1	5
Denmark	.....	.....	3	12
Great Britain	55	81	9	11
Italy	11	44	10	28
Netherlands	.....	.....	1	1
Poland	.....	.....	1	2
Sweden	26	51	61	184
Switzerland	32	83	40	60
Belgium	25	66	20	34
Canada	46	52	.....	.....
United States	14,554	16,542	9,869	12,600
Total	**15,236**	**17,637**	**10,517**	**13,605**

In 1934 the United States furnished 95% of the units imported.

Table 3—French Commercial Imports, 1934-35

	During 1934 No.	During 1934 (1,000 frs.) Value	11 Months, 1935 No.	11 Months, 1935 (1,000 frs.) Value
Germany	1,494	3,047	539	1,071
Austria	.....	9	.....	2
Denmark	171	433	217	388
Great Britain	95	230	107	130
Italy	203	422	81	142
Norway	.....	.....	1	.....
Netherland	92	57	125	84
Sweden	953	1,219	572	635
Switzerland	1,299	2,131	437	683
Belgium	630	706	388	429
United States	5,672	7,894	3,283	4,721
Algeria	5	3	18	31
Syria	1	.....	.....	.....
Martinique	2	5	.....	.....
Czechoslovakia	40	49	.....	.....
Total	**10,667**	**16,205**	**5,768**	**8,316**

imported during the first five months of 1935, instead of the 1934 imports.

Quota for the first quarter of 1936, for all countries, finally set by the Ministry, was 239,600 kgs., for household refrigerators, and 228,800 kgs., for commercial equipment. This was about four times the figures established as the quota on Dec. 31, 1935.

Basing its action on information and instructions received from the Ministry, the two quota administration committees arranged for imports from U. S. manufacturers as follows:

Household:

The quota would be 63% of what was imported in 1934 first quarter; of this 15% would be taken off to take care of new importers; if this reserve is not fully taken the balance is returnable to old importers on a prorata basis.

On this basis, individual licenses were granted for about 53% (63 x .85) of the quantities imported in the first quarter of 1934.

Commercial:

Taking the quantity imported in the first 5 months of 1935 this was divided by 5 and multiplied by 12, to obtain a yearly basis; the result was divided by 4 to get a quarter. The gross figure so obtained is reduced by 20% to accommodate new importers and licenses were issued to old importers on this basis. Anything that may be left of the 20% reserve is returnable to the old importers on a prorata basis.

In the *Journal Officiel* of March 8, appeared a notice fixing as a basis for household units the imports for the first five months of 1935. This meant that the 1936 imports would be governed by imports made in the first five months of 1935 (see Table 1).

During this period, negotiations were still being carried on between the Chambre Syndicale and the French non-syndicated enterprises and Nema members, with a view to having the quota restrictions changed.

Without waiting for the result of these discussions, however, the Chamber of Deputies passed the decree on February 18, without deliberation, and the Senate took similar action on March 15. The decree thus became law, at least until the end of the year.

What puzzles those who were seeking easement of the quota is that their deliberations were ignored by both Chamber and Senate. Ordinarily, the fact that joint deliberations are being held on any important subject is sufficient to delay legal action, at least temporarily. Government officials usually let individuals exhaust all ways and means of arriving at agreement before they step in. This case, however, was one important exception.

• • •

The French Syndicate

On February 24, the French Nema committee received a notice from the French syndicate, indicating that its members were not opposed to collaboration between French manufacturers and the importers, but it would like to study the Nema members' situation in detail.

Meanwhile, however, the French syndicate, Nema members claim, caused the government to embarrass the non-syndicated industries and foreign importers by scaling down the originally agreed 1934 quota to approximately half, making hazardous any further movement of stocks by French organization, and this at a seasonal peak.

This posed still another perplexing problem for the non-syndicated and French companies, who had already found the going very hard, from a sales standpoint, because of the inherent sales resistance and the high French protective tariff.

About the only course open to them, it appeared, was to request the French government to withdraw, or at least soften, the so-called "protective measures," until French Syndicate and French Nema members had exhausted all possibilities of organizing market in preference to maintenance of quota impediment.

This, it appeared, was particularly valid, especially since the fact has long been recognized that the so-called "French industry" proper has production facilities incapable of satisfying more than one-fifth of the domestic refrigerator market, and about half of the commercial and industrial refrigerator market, to say nothing of air conditioning.

French industries dependent for their livelihood on the growth of French Nema committee, protested against this "arbitrary, isolated, and unauthorized" action on the part of the French Syndicate.

In the denial, the following facts were given regarding the Syndicate:

It was organized in 1933, pursuant to and by virtue of an ancient law entitled "Law regarding the establishment of professional syndicates." Article 3 of this law provides that "professional syndicates have for their exclusive purpose the study and defense of economic, industrial, commercial, and agricultural interests."

Personnel employed by the Syndicate enterprises amounts to approximately 650 persons, and the salaries and commission involved are in the neighbourhood of 4,000,000 francs per year.

Dealerships of the Syndicated members total approximately 300; turnover and revenue taxes produce annually approximately 100,000 francs for the French treasury; joint publicity and propaganda commitments are not more than 100,000 francs per annum.

Effective realized prices of the Syndicate members are approximately 25 to 30% below the average realized prices obtained by Nema importers on household refrigerators, and from ⅓ to ¼ below the average realized prices of Nema importers in regard to commercial and industrial equipment.

The French refrigerator industry has no export market, except the French colonial market. This is insignificant, only 17 units having been sold by it to the French colonies during 1935.

The French refrigerator industry's relative position in the world market is approximately 0.3%.

French customs statistics given in Table 2 show entries of refrigerator equipment and similar apparatus into France during 1934 and 1935.

Volume of export sales of American refrigerators and equipment in France is reflected by the figures in Table 3, values of totals being in thousands and representing invoices to distributors (exclusive of York and Carrier):

• • •

French Nema Members

French Nema importers' organization members are:

Mr. Gurtner, Paris, Apex Electrical Mfg. Co.

Carrier Continentale, S.a.r.l., Paris, Carrier Engineering Corp.

Mr. Dumont "Salvador," Paris, Crosley Radio Corp.

Local French Refrigerator Organization

Frigidaire Ltd., Paris, Frigidaire Division General Motors Corp.

Frigeco, S. A., Paris, General Electric Co.

George N. Benkly, Paris, Gibson Electric Refrigeration Corp.

Markt & Co. Paris Ltd., Paris, Kelvinator Corp. and Leonard Refrigerator Co.

Harry G. Noordberg, Amsterdam, Merchant & Evans Co.

Couesnon, S. A., Paris, Norge Corp.

Cie. Gle. d'Electricite, Paris, and Servel Ltd., Paris, Servel, Inc.

Arce & Cie., Paris, Sparks-Withington Co.

Berton & Sicard, Marseilles, Universal Cooler Corp.

Societe pour le perfectionnement de la Chaufferie, Paris, Westinghouse Electric & Mfg. Co.

York Shipley, Ltd., Paris, York Ice Machinery Corp.

Jean Robert, Clermont Ferrand, Brunner Ice Machine Co.

Importance of these Nema firms in the French refrigeration picture may be gauged by the following facts and figures:

The purchase made by the members with the French subsidiary and dependent enterprises:

1930	Frs. 9.3 million
1931	9.6 million
1932	10.2 million
1934	11.5 million
1934	19.2 million

Customs duties and taxes paid by American importers into the French treasury:

1930	Frs. 5.2 million
1931	5.8 million
1932	5.4 million
1933	5.7 million
1934	12.6 million

Salaries, commissions, labour, sales personnel (not including expenses of agents and representatives):

1930	Frs. 9.2 million
1931	12.4 million
1932	12.6 million
1933	12.8 million
1934	29.6 million

Members' other overhead expenses in France, including publicity and propaganda:

1930	Frs. 9.3 million
1931	11.6 million
1932	11.1 million
1933	11.1 million
1934	14.9 million

Personnel employed (excluding personnel of representatives and agents):

1930	426
1931	506
1932	515
1933	554
1934	786

French salesmen of the Nema members in France total approximately 1,200 men.

The members of the French Nema committee have approximately 5,500 selling outlets in France alone, and a highly specialized selling group.

Only one-fifth to one-third of the average realized price in France flows back to the American manufacturer in the United States. French national economy should continue to benefit in the future, at a gradually increasing rate, by not less than Frs. 76,000,000 per year, on the basis of the French Nema group's sales performance in France in 1934, if the quota were removed, the distributors point out.

The normal price in France on an American domestic household refrigerator is 4,000 francs, whereas the normal price of a locally assembled or locally made 4-cu. ft. refrigerator is 3,000 francs. Differential in other sizes is proportional.

Prices of American-built commercial refrigerators are substantially above those of French-built material. This differential is brought about entirely by the price difference of the actual refrigerator equipment, compressors and accessories; the other elements making up a complete Nema installation are in either case of French manufacture.

In a complete installation, the cost of the actual refrigerator equipment amounts to from 15 to 25% only of the total cost.

* * *

Promotional Development

It is an acknowledged fact that, at the beginning of the American electric refrigerator export era, sales resistance in France was notorious. French importers time and again declared that France was no country for this sort of business, and that an inherent sales resistance of a type entirely unknown in the United States would for many years to come defeat any pioneer work.

Large and powerful French industrial units, the legal owners of refrigerator patent and manufacturing rights, have steadfastly declined to manufacture the equipment.

Encouraged by the success of American manufacturers in introducing mechanical refrigeration to United States homes, with the consequent rise in standards of living and drop in infant mortality, French representatives of Nema companies began what they well knew would be a long, uphill fight—the effort to introduce and develop electric refrigeration in France, and to bring its benefits to all the people, rich and poor alike.

The more important French organizations of the Nema group have made, during those pioneer years in France, a joint cumulative investment in French goodwill aggregating approximately 40 million francs, with no other prospect but that of eventually reaping, perhaps within the next decade, the fruits of their promotional development activities.

The combined efforts of American manufacturers of electric refrigerators, and of their representatives and distributors in France, have translated themselves into an annually recurrent increment of sales volume. This, however, will still have to be considerably accented in order to be come productive of net profits in reasonable proportion to the cumulative investments made in the interest of constructive market development and rapid penetration, say Paris distributors. (And if you can gargle that sentence in one breath, you should be making campaign speeches.)

* * *

Competitive Troubles

In addition to their troubles with a stubborn market, French Nema representatives have also had to combat another sales-dropping factor, they assert — unfair competition from French firms in advertising.

The expression "unfair competition" (concurrence deloyale), although not found or defined anywhere in the codes or statutes of France, is in general use by French courts.

The cardinal principle of unfair competition in France, as shown in the court decisions, is *intent to injure.* French jurisdiction makes a distinction between unfair competition (concurrence deloyale), and unlawful competition (concurrence illicite), based on the existence or non-existence of wrongful intent. Where an act is done with intent to injure, it is considered an act of unfair competition. Where a party in good faith commits a legal wrong or simply through negligence or carelessness injures another, it is considered an act of unlawful competition.

* * *

Advertising Laws

According to French law, a manufacturer has the right to use every legitimate means in advertising the merits of his goods or of his establishment, but he must refrain from doing anything of a nature to injure the reputation of his competitors or to disparage their business. It is not considered unfair for a person or enterprise to indulge in the most extravagant claims for his or its own products, as long as he or it does not refer to a competitor or competitors disparagingly.

In order to constitute an act of unfair competition, disparaging statements must be proven to have been publicly made.

Advertising has been used by the French Syndicate and its members respectively as a weapon of destructive and predatory competition, competitors assert.

Although the disparaging statements do not mention any competitor or competitors, or their products or establishments by name, the unfair competition, it is claimed, lies in the nature of the allegations and insinuations which cause injury to the competitors. The public, it is said, can easily understand to whom the disparaging statements refer, it being common knowledge that the French organizations of the foreign importers and the non-syndicated manufacturers or distributors in France supply

How the French "Refrigerate"?

Two types of the garde a manger, or "fresh air refrigerator" with which practically all French apartments and homes are equipped. At the left is an apartment in which the garde a manger is on the inside, with square vents to the outside air. On the right the box is on the outside, just under each window.

about 90% of the French refrigerator market and that out of these 90%, 70% are Nema importers.

* * *

Trade Restraint Charged

French non-syndicated refrigerator manufacturers or assembly works and the French organizations of Nema see in the syndicate's action, as well as in its isolated action which precipitated the issuance of a refrigerator quota, (1) an attempt to control the supply or the channels of supply; (2) a combination in restraint of existing trade; (3) an attempt to limit and restrict French non-syndicated assembly production based on American imports; (4) an attempt to damage non-syndicated and dependent enterprises and dealers by gradually forcing their plants and establishments into idleness.

All of which, they assert, constitutes unfair and illegal competition and an action in restraint of trade to enhance the price and retard the distribution of equipment which is "of primary necessity for the improvement and the maintenance of public health and constitutes a powerful, efficient and successful weapon to combat infant mortality, thus seriously encumbering public health and the freedom of individual action necessary to national economy," as the Nema distributors put it.

Inability of the French assembly firms to satisfy the French market qualitatively and quantitatively is undeniably demonstrated by the fact that it took the industry from 1910 till 1935 to reach an annual output and sales turnover of only 2,000 domestic household refrigerators and of only 1,500 commercial installations.

* * *

French Market Saturation

Compared with this country, France shows a very low rate of refrigeration saturation. United States, with an estimated 7,250,000 electric refrigerators in use as of Jan. 1, 1936, has a saturation of 34%. France, with an estimated 8,000,000 wired homes, has but 56,000 electric refrigerators on its lines—a saturation of but 0.7%.

In other words, to equal the point to which this country is already advanced, in terms of refrigeration, just 2,664,000 more units than are in use today in that country would have to be added to French power lines.

Consistent guaranteed increment of domestic load has become a life factor to the power companies who, in France as in many other countries, are barely succeeding in riding out the economic storm.

Refrigerator selling in France, under the auspices of the national power producers, should have reached today a measure of commercial proficiency which is only defeated by the quota obstacle, and again by a guarded, but none the less effective, policy of obstruction and restraint emanating from the cobwebbed strongholds of ancient vested private interests.

Slow progress, if any, is being made by most of the French companies in the development of a larger use of electricity in homes. The average performance might have been an annual increase of somewhere between 2 and 5%, which would mean that at this rate the French power companies would take from 20 to 50 years to double the present average consumption of their domestic load consumers.

These analytical flashes on French refrigerator market potentialities and on refrigerator merchandising activities, and their bearing upon the load factor in France, critics say, demonstrate the stifling effect directly and indirectly radiating from the refrigerator quota throughout the network of the economic system of France.

Prominent utilities in the metropolitan area, asked to estimate their 1936 increase in domestic loads for non-lighting purposes, were loath to venture any sales forecasts while the refrigerator quota decreed by the government continued to weigh heavily upon the most important factor of non-lighting current consumption in France.

With the exception of electric cooking ranges and water heaters, which are relatively scarce in France, the refrigerator is the biggest current user, as is shown by the following list:

	Cost of Electricity Per Month, Francs
Curling iron	1.00
Heating pad	1.00
Clock	1.50
Washing machine	2.00
Space heater	3.00
Kitchen mixer	3.00
Vacuum cleaner	4.00
Flat iron	4.00
Toaster	4.00
Percolator	4.00
Sandwich toaster	4.00
Radio	....
Ironing machine	8.00
Oil burner	15.00
Refrigerator	31.00

Revenue prospects awaiting French utility companies, if the refrigerator quota is lifted, has been sized up as follows by French Nema refrigeration engineers and salesmen:

Every 1,000 electric refrigerators on the central station lines means the equivalent of 1,000 new residential customers without any expense on the part of central stations for additional equipment.

The installation of an electric refrigerator in any home will definitely increase the current consumption by 600 or more kwh. per year.

Electric refrigeration insures such an unvarying load, day and night, winter and summer, that it tends to smooth out the peaks and valleys caused by the natural fluctuations of the lighting load.

The predetermined current consumption of an electric refrigerator permits to central stations an accurate anticipation of revenue.

The quota on refrigerators, these men claim, is costing the French power producers annually a loss of about 5 million francs, a loss which will be magnified if the quota becomes a permanent impediment.

While the composite loss to the French treasury may not be quite as evident, it is there, these men say, and is as important as the loss to national labor and its dependent homes, to the power companies and their stockholders, and to scores of groups or interests which are essential contributaries to the commonwealth.

* * *

Cooperative Campaign Plans Abandoned

American importers had made broad plans for cooperative campaigns with French utility companies, to bring low-cost refrigeration to the masses—but, unless the ban is lifted, most of this planning will have to go by the board.

The quota system has been used widely in France for the purpose of restricting imports of items other than refrigerators.

Main objections to the way the system works out are these:

If individual licenses are not issued to the importers proper, there is a rush of imports to the ports, and the quota is exceeded, because of the time necessary to collect returns from each port and issue the notice closing the quota. Goods in transit at the date of closing the quota are frequently admitted, and these have sometimes amounted to more than a year's quota.

The rush of imports at the beginning of each quota period and the consequent lack at the end bring about fluctuations of the market. (The allocation of refrigerator import licenses avoids these difficulties, importers admit, but this allocation involves a great deal of work and many questions of discrimination between competing firms, especially in view of the fact that the license is treated by the government in the manner of a vested right of the importer's agent in France.)

Quotas tend to increase prices, to the great profit of those who obtain licenses. The system tends to reserve trade for existing firms and existing sources of supply. This may have its advantages in times of crisis and disturbance besetting an established industry, but it is a serious fault in the initial phases of a new industry or in a permanent system.

The refrigerator quota decree, importers assert, will increase competition on the home market by diverting to or retaining within itself goods normally exported; and the intended benefit of the reduction of imports will be, to a considerable extent, lost.

The value of the growing domestic industry, they say, is lessened by this state of affairs, and monopolistic tendencies are cultivated to the detriment of consumers. The quota measure is, apparently, much less beneficial than it was intended to be by its advocates.

Disregarding the public health angle, opponents insist, the quota system will have outlived its purpose when it fails to produce less than the maximum intended.

Depreciation Surtaxes

Recent figures show that, while France's customs receipts have considerably risen above those for the comparable period of last year, despite curtailment of imports, the economic situation tends to stagnate under the protective national trend which seriously stifles the normal exchange of national wealth.

In addition to the quota, various other measures subsidiary in their nature, have been adopted by France ostensibly with a view to restoring her foreign trade to a sound basis. The principal expedients under this heading are the institution of currency depreciation surtaxes and the increase of customs duties.

It is said that the Chambre Syndicale is pressing for more stringent application of these expedients, in connection with the foreign refrigerator imports into France.

Depreciation of the currency of any country, it is generally agreed, lessens costs of production there, measured in terms of other currencies, and thereby lessens the effectiveness of protective duties of other countries aimed at keeping out its products.

France, in such cases, imposes extra duties on imports from the countries concerned, except on goods whose price is fixed by a world market and goods admitted free of duty.

This surtax, in the opinion of many, has probably prevented France from obtaining relief which would otherwise have been given against some of the British duties which bear heavily on French exports. While this may demonstrate in favor of a stable currency, it may also tend to unite countries whose currency has depreciated in a common opposition to the country imposing this surtax.

French organizations feel that the French independent industries enjoy a safe margin of protection in the tariffs which, including heavy transportation, incidentals and others, bring the landed cost to the importer in France to more than twice the average cost F.A.S. New York.

Under the circumstances, they say, a currency depreciation surtax appears unnecessary.

* * *

Lack Detailed Classifications

Another difficulty in the way of doing business with France arises from the fact that the present customs regulations were formulated before the development of the electric refrigeration industry in the country, and hence there is no specific and detailed classification for such equipment.

For example, thermostatic expansion valves which are required for the operation of automatic commercial units are subject to quota restrictions for some other class of devices. When the quota for these other devices has been filled, no thermostatic expansion valves can be imported, in spite of the fact that these articles are not manufactured in France, and are almost exclusively purchased from the United States.

American representatives are widely recognized as the most active in the French refrigeration field. They work harder, sell more (when they can get the units to sell), employ more salesmen, office workers, and warehouse men, and pay more taxes than regular French concerns.

With few exceptions, all of their employes are natives of France; and they use a great many parts manufactured in the country.

In the commercial field, especially, value of the imported machinery is only a small part of the total price of an installation. In many cases, the electric motors are purchased in France. So also are evaporators.

Cabinets and cases, in most cases, are bought from French manufacturers.

Purchases of importers from dependent industries, such as those named, totaled about 20 million francs in 1935.

To give some idea of the importance which importers have gained in the French refrigeration market, consider these figures, covering the years 1930 to 1935:

Quantities imported (in metric hundredweights): 1930, 5,600; 1934, 16,195.

Number of appliances imported: 1930, 3,800; 1934, 13,828. Duties paid: 1930, 3,400,000 francs; 1934, 9,305,499 (not including import taxes). Import taxes: 1930, 1,756,780 francs; 1934, 3,291,928. Commissions and salaries: 1930, 9,188,500 francs; 1934, 29,619,700 francs. Number of employes: 1930, 426; 1934, 786. Equipment purchases made in France (motors, evaporators, etc.): 1930, 9,275,300 francs; 1934, 19,999,810.

Limiting importations of a group which enters this much into the financial picture of the country, American representatives claim, seems to be in the nature of biting the hands that feed you—in other words, hurting the French treasury more than the country's own refrigeration firms will help it.

* * *

Advertising Hopeless

A good part of American representatives' expense is speculative sales promotion in the hope that business increases will follow. With things as they now stand, of course, expenses for this sort of "propaganda," as the French call it, is curtailed.

Importing firms, with the quota stacked against them, spend only what they must. They dare not go out after all the business they can get—all they can do is sell all the refrigerators they can get, and watch the prospects go by after that. None of them is altruistic to the extent of prepping the market for a competitor.

The present specific rates of duty average approximately 48% ad valorem on household refrigerators, and 21.1% on commercial refrigerators. In addition, there is an import tax of 2% of the duty paid value on American, Italian, Belgian, and English refrigerators.

Prices offered by French industrialists to commercial customers are generally less than those of importers. Daily, importers are forced to give up business because of the better terms offered by French producers. The same is true of domestic equipment. Where the price of American equipment for 100/120 litres of capacity runs between 3,500 and 4,200 francs, refrigerators of French manufacture are offered between 2,500 and 3,200 francs.

* * *

Frozen Distribution

Under the present system of administrating the refrigerator quota, any exporter who changes his French agent or representative takes the risk of losing his basic quota, since all right, title, and interest in and to such quota is treated by the government as belonging to the agent.

If the new representative was not in the refrigerator business at the time of the issuance of the quota, under the present system he cannot obtain a quota permit.

Present method of issuing import permits makes it comparatively easy to freeze the established channels of distribution. Manufacturers are almost compelled to maintain their connection with their present representatives in France, no matter how much he loafs on the job. Otherwise, the manufacturer will lose his basic quota.

Abuses in the system, it may readily be seen, may easily arise. If a French manufacturer wants to get an American rival out of the way, all he has to do is to induce that company's agent to sell his "right" to his own representative. When this happens, the first dealer is put out of the selling picture as effectively as if he had shut up shop for good—that is, at least until he can get himself another agent who has an importing "right."

All this may happen to an American manufacturer, regardless of how well his product is known in the country or how much money he may have spent in building up his product's worth in the public eye. Lose your agent, and you're lost, too.

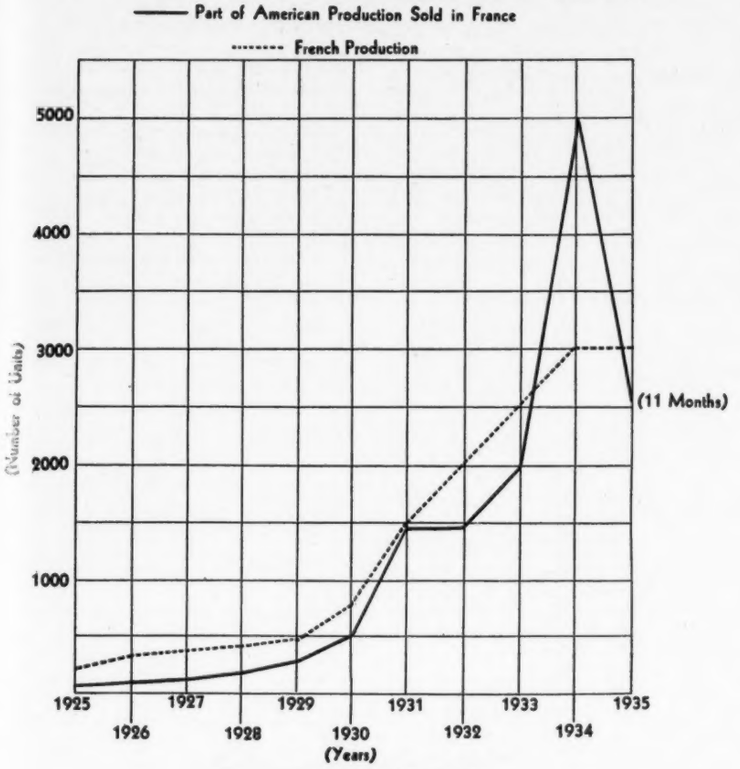
* * *

Legal Interference

Of course, a good deal of this speculation comes under the category of legal inference—that is, it *can* happen, although it actually doesn't, often. But the mere fact that it *might*—that a representative of an American refrigerator manufacturer could be bought out by a native French concern, and be thus forced off the market, hasn't done a lot to encourage American firms to spend an overly large amount in sales promotion.

The fractional monopolies which this practice tends to create, French non-syndicated manufacturers and American representatives claim, are in restraint of trade. By weight of both ancient and contemporary authority of French doctrinal commercial jurisprudence, they point out, the system is "wholly untenable," both from the

Comparative Sales of American and French Refrigeration Equipment in the French Home Market, 1925-1935



Commercial Refrigeration

standpoint of international trade exchanges and the freedom of trade within France itself.

As a temporary measure, pending more complete agreement between France and the United States on the subject of administrating quotas, the French government is understood to be planning the institution of internal license system for the allocation of industrial quotas among the various importers, subject administration to be submitted to an organization authorized by the United States government and approved by France. This plan, it is said, would allow the French government to resume its freedom of action, if it thinks the licenses are not being allocated properly.

A licensing organization of this type, it is reported, would have access to French government officials to insure the smooth operation of the quota system.

* * *

Central Organization Suggested by Nema

Unfairness of the present quota system, which, in effect, puts the American importer at the mercy of his French agent, whom he supports by advertising campaigns and sales promotion efforts, would have been largely avoided, Nema representatives believe, if administration of it had originally been placed in the hands of one central organization.

They suggest, for this important work, either the French Nema committee, or the U. S. Chamber of Commerce in Paris.

In their efforts to bring about a change in the present quota system, American importers' agents and independent French manufacturers have established about 70 "reasons why," covering what they believe are the most unfair portions of the decree. Some of the important points brought up are:

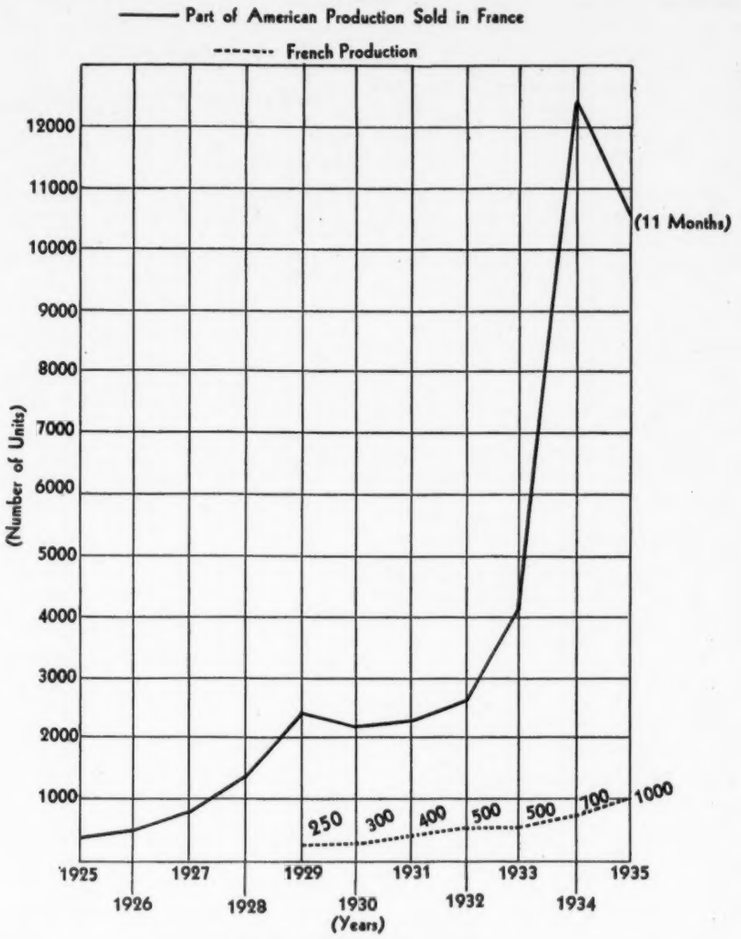
1. That the French Syndicate does not represent more than 30% of the country's enterprises whose interests are involved in the outcome of the quota problem.

2. That the Syndicate, in putting through the quota decree, did so without consulting independent French manufacturers and American agents, who dominate the French market, and whose payrolls, expenses, and contributions to the French treasury are much greater than the Syndicate's own.

3. That the Syndicate's action is an ill-concealed move, in the guise of national protectionalism, to run the French non-syndicated firms and American import agents out of the refrigeration business.

4. That instead of perilling French industry, American imports have really given it life, and have furnished all the impetus the industry has received up to this time. Importers, they assert, are still the backbone of the French industry.

5. That much of the refrigerating



Household Refrigerators

machinery imported is not obtainable in France; that, in the commercial field, only about one-fifth of the machinery is imported, the other four-fifths being manufactured in France, employing French labor.

6. That importers spend about 5 million francs a year in advertising to promote the good of the industry as a whole. French firms themselves do little or no advertising.

7. That the so-called "independent" French industry itself imports from one-third to one-half of its equipment from other countries, principally from the United States.

8. That there was no abnormal increase of imports during 1934, as shown in French customs figures. While composite imports totaled 16,195 metric quarts, about 9,000 mq. of this was imported under a different tariff 7,195 mq. as the 1934 import figure, a reasonable increase over 1933 imports, which totaled 5,958 mq.

9. That the Syndicate's charges of dumping by importers is unfounded in fact, but that Syndicate members themselves are known to have engaged in price cutting under circumstances which leave them open to charges of unfair competition.

10. That American models and equipment are currently being copied by French manufacturers, who themselves do not have research facilities to design models of their own, and who cash in on the time and money spent by American manufacturers whose products they are trying to bar from the country.

11. That large and powerful French manufacturers, who hold refrigerator patent and manufacturing rights, have steadfastly refused to get into production, principally because of the high expense involved and the difficulty of making any sort of showing in the foreign field, now pretty well conceded to other countries.

12. That keeping up the quota impediment will result in a loss of approximately 10 million francs a year to French utility companies, because native manufacturers do not produce enough refrigerators to justify an extensive load-building campaign.

* * *

Potentialities of the French Market

Potentialities of the French refrigeration market are considered very promising by those in the country who have made a close study of the situation. These observers believe that, despite the rather notorious sales resistance factor, the French market could easily absorb 50,000 refrigerators annually.

France, these observers say, is slowly entering upon an era when the home of a new type, with new comforts and "necessary luxuries," will be accepted generally.

Pioneer promotion work by its electric industry, and by the advocates of new materials and new methods, it is believed, will then bear real fruit.

* * *

Not Enough Space For Wine Bottle Storage

EDGAR CARMEL, manager of Frigidaire, Ltd., 46 Rue la Boetie, Paris, says that the greatest holdback to American household refrigerators in the French market is the fact that there is not enough space between the shelves to permit storage of the high bottles in which French wines are corked.

The coils ordinarily used in American-made refrigerators, Mr. Carmel also says, are not very well adapted to local French requirements. They need to be spaced differently.

Frigidaire's Paris organization is a Canadian company, although it is backed by American capital. It operates as a factory branch, and sells Frigidaires at retail in Paris only. In the provincial centers, the company acts as distributor, working through 52 exclusive dealerships.

Salesmen, says Mr. Carmel, are recruited mainly by advertisements in newspapers. There is a high turnover in the large cities, but the men stay with their selling jobs a lot more steadily in the provincial towns.

But, wherever they may be picked up, the men are all green, and require several weeks of intensive sales training before they can be trusted to take to the trail with any degree of selling success.

Mr. Carmel, to meet this deficiency in sales material, runs regular training schools for new men. American sales manuals, translated into French, are used in the schools. In Paris, Mr. Carmel supervises the school personally. In the provinces, dealers' schools are operated by traveling instructors, working out of the Frigidaire Paris headquarters.

The company's advertising program is divided between newspapers, trade magazines, motion pictures, exhibits at French fairs, and direct mail. Of all these, Mr. Carmel says the last has proved the most effective. He credits this with bringing in the "most of the best," as far as prospective buyers are concerned.

Fully 55% of the company's business is of the credit variety, Mr. Carmel says. The company uses the GMAC plan in financing time payment sales.

On credit sales, the company demands a down payment of 25% on commercial equipment, and from 10 to 15% on household equipment. Maximum length of time permitted on household sales is 18 months.

France's future is bright, as far as refrigeration is concerned, in Mr. Carmel's opinion. The factors which he thinks will govern the future development of the French domestic market are:

1. A more thorough education of the public to refrigeration's benefits.

2. Better prices on refrigeration equipment.

3. Closer adaption of American-made equipment to prevailing French local conditions.

* * *

French Sales Engineer Learns, Then Teaches

L. L. MERTENS, Frigidaire's chief engineer in the Paris branch, sees eye to eye with Mr. Carmel on the matter of shelf arrangement to take care of tall wine bottles, as well as on the need of different coil spacing in household units.

A reader of the NEWS for several years, Mr. Mertens would welcome more technical news, and liked the paper especially in the days when a special engineering section was published.

Work in the sales engineering department, over which Mr. Mertens has supervision, consists mostly, he says, in "learning" and "teaching."

After obtaining the factory literature from headquarters in America, the company engineers first digest it, master it themselves, and then translate it into workable material for use in the field.

Once the material is put out in the field, the department must next watch its use. As Mr. Mertens puts it: "We must see that it is read, understood, and used."

The sales engineering department of Frigidaire, Ltd., Mr. Mertens explained, is divided into four sections. First of these is concerned with construction work, the second with proposals, the third with sales training, and the fourth with the inspection of installations, to see that they are operating satisfactorily.

The sales training under Mr. Mertens, which beginning salesmen must all undergo, covers both technical and sales work and lasts for two weeks. After the fledgling salesman gets into actual production, weekly meetings keep him abreast of what's what in the industry.

For those who are extra ambitious, brush-up courses are conducted; for those who may be slipping, there are regular courses for improving sales technique.

RENE DUMING is sales manager of Frigidaire's retail operations in Paris.

* * *

Crosley Can't Import Fast Enough, Claims Sopher

Managing director of Shelvador, which, as you have probably already guessed, is the French agent for products of Crosley Radio Corp., is S. SOPHER, Parisian theater and night club tycoon, who helped us see the bright lights. The company is well established financially, with a capital of about 650,000 francs.

P. DUMONT is sales manager of the company, which sells both household refrigerators and air-conditioning equipment.

Mr. Sopher is among the representatives of American manufacturers most troubled by the quota decree, and nobody will be happier than he if and when it's eventually lifted.

Under present restrictions, the company is allowed to import 115 tons of equipment, by metric weight. Mr. Sopher says, however, that the company could sell twice that amount, without half trying, if he could get the equipment.

He would like to see few mechanical changes in American machines brought in for sale to the French market. Hermetic units, to his way of thinking, should be included on all machines shipped to the country.

Crosley is the third largest importer of American-made machines in France, Mr. Sopher says. He estimates the first nine companies as being Frigidaire, Frigeco (General Electric), Crosley, Kelvinator, Westinghouse, Norge, Gibson, Sparton, and Fairbanks-Morse.

Distributing through about 20 dealerships, scattered all over France, the company operates its own retail outlet in Paris, just as does Frigidaire.

And, just as with Frigidaire—or, for that matter, just as in the United States—good salesmen are mighty hard to find, and hard to hold once you get one.

The old saying is that "everything comes to him who waits," but Mr. Sopher finds this isn't true, with *good* salesmen. You have to go out after them. And he does, mostly through newspaper advertisements.

But, even as the Good Book says about the poor, Mr. Sopher finds that the poor salesmen are always with him. Drifters, he finds, usually come in without invitation—and do they stop drifting, once they find what they consider a soft berth!

"You have one hell of a time giving them the sack," Mr. Sopher says.

Good men, however, are worth training hard, Mr. Sopher finds. He holds school for newcomers for an hour every morning. When they get on their own feet, the men are paid a salary and commission—mostly commission.

Main advertising mediums employed by the company are newspapers, direct mail, and sizeable exhibits at the many fairs held annually throughout France. This last type of advertising, Mr. Sopher has found, is particularly advantageous to his company.

About 78% of the company's sales are for cash, the rest on six months' time payment terms, with the notes discounted at the banks, and payable at the cashier's cage instead of at the dealership.

The future of refrigeration in France? It's great, Mr. Sopher says—*if* the quota system somehow disappears, and prices are lowered to permit sales at a more reasonable figure. Otherwise, he's not so sure about it.

* * *

That Bottle Storage Complaint Again

Mr. Dumont, sales manager of the Crosley Paris agency, thinks American manufacturers might profitably take into consideration the customs of the countries in which they hope to do business.

Translated into terms of the French market, this means that refrigerators exported from the United States ought to have more room for tall bottle storage. This seems to be a dominant French complaint against American machines.

For instance, the real Frenchmen likes to be able to put a few bottles of champagne or Alsace wines in his refrigerator—on the *right* side. If the cabinet is not adaptable to this old French custom, the salesman who's handling the line runs into a sales barrier that is not always so easy to surmount.

Mr. Dumont has given the future of the refrigeration market in his country considerable thought, particularly as regards foreign firms and the sale of American-made machines. His conclusion is that the French companies—or American companies who are able to establish manufacturing operations in the country—will eventually have things pretty much their own way, unless the quota system is changed.

This latter happening, of course, is what he'd like most to see. Unless something of that sort does occur, though, he's pretty much sold on the opinion that the potentially fine French refrigeration business of the future will be dominated by firms who manufacture their units within the country and get away from imposts, duties, quotas, and all the other attendant bothers with which importers are currently and constantly beset.

* * *

Kelvinator Manager Sees Great Future Market

Markt & Co. handles Kelvinator equipment in Paris and throughout France. RAOUL BASTIEN is managing director of the company, at its Paris headquarters.

Handling domestic, commercial, and industrial refrigeration equipment (Kelvinator domestic equipment, York commercial, and Temprite beverage and ice cream equipment) Markt is no small organization. The company has offices in New York City, Paris, London, Hamburg, and other European centers.

"American manufacturers of refrigeration parts should not attempt to sell to everybody in France," Mr. Bastien says. "They should sell only to responsible concerns.

"The market, though progressing, is still at the beginning of its real development, and such development can only be taken care of by responsible companies—those who are spending money in promotion work, advertising, and who pay representative salaries. These firms must rely, for success, upon the effective support of interested American manufacturers.

"In 1934, for instance, only 10,000 domestic refrigerators were sold in France. The market was not able to absorb any more, because the demand for refrigeration has not been developed to any considerable extent."

Markt & Co. is wholesale distributor of hardware specialties, and has close to 8,000 retailers as customers throughout France. Besides, the company has some 150 provincial retailers for domestic refrigerators, and about 30 retailers for its commercial equipment.

This organization, says Mr. Bastien, covers practically the whole of the French market.

Kelvinator and Frigidaire, being the first American refrigerators offered the French public, hold an advantage over other manufacturers in this respect, Mr. Bastien believes.

"We have full confidence in the prospective development of the French market," he declared. "We are working in friendly cooperation with our competitors, and only wish that our cooperation is not crossed by irregular imports of refrigeration equipment from America."

Salesmen employed by the company are paid salary and commission. Most of them, says Mr. Bastien, have been with Markt & Co. for a number of years. Service men, who are paid straight salaries, are required to keep in step with developments through a training course each year.

The company's advertising efforts are spread between large exhibits at fairs, newspaper splashes, and direct mail campaigns.

One of the principal reasons why the French domestic market has been slow in developing, Mr. Bastien declares, is that practically every French country house has a good cellar, in which, the French believe, food may be kept in good condition.

Rapid spread of electric service in the past few years, however, is a factor most favorable to increase in the use of refrigerators and other domestic electrical appliances, he believes.

* * *

Export Price Concessions Fair, Says de Castro

La Representation Generale is sole distributor, in Paris and the Seine region, for all products of General Electric Co. The company also distributes Easy Washers, Devoe & Reynolds paints, and Fairbanks-Morse radios in France and colonies. RALPH E. DE CASTRO is owner and director of the organization.

Most of the company's advertising program is concentrated on French fairs, although a considerable amount is spent in newspaper advertising and direct mailings to prospective buyers.

Sales possibilities in the French home market, Mr. de Castro believes, hinge on one all-important thing—price. If prices of American-made units for sale in France can be reduced, he thinks the industry can really go places in that country.

Today, an American refrigerator of about 4 cu. ft. capacity sells for approximately 4,200 francs—about $280 in American money. Naturally frugal, the average French homeowner won't touch one with a 10-foot pole at that price.

It will pay American manufacturers to realize, Mr. de Castro says, that, since service costs to the factory are eliminated in sales made to foreign countries, special price concessions may easily be made on exported machines. This should apply to complete units, as well as to replacement parts.

Shipping and duty charges must be paid by the local distributor, Mr. de Castro reminds, so that a lowering of wholesale costs would not make it any harder for the manufacturer—but, at the same time, would ease conditions considerably for the French importer.

La Representation Generale's sales are handled both directly and through dealers. The company itself employs 14 retail salesmen, and good men are hard to find.

Eight out of every 10 applicants, Mr. de Castro says, are floaters, who go from one house to another. Generally these men will start with either Frigidaire or General Electric, and, failing to make good there, will go on down the line, stopping at each dealership a short while before being pushed out of the selling picture altogether.

Mr. de Castro handles training of new men personally, both individually and by group classes. Salesmen are paid on a commission basis, with extra premiums for the sale of certain models and a bonus if sales go over the regularly established quota.

Sales are divided about 50-50 between cash and terms, Mr. de Castro says. All time payment sales are financed by investment companies, and, by a special exclusive arrangement with power companies, G-E is able to offer its buyers up to four years to pay on a "rental-sale" basis.

As an example of what a really top-flight salesman can do in the French market, Mr. de Castro cites the case of a Mr. Stirby, one of the men in his organization. This man has for several years averaged more than $60,000 per year in sales to individuals.

If this sort of selling isn't a world record, Mr. de Castro is willing to bet that it's at least a new high mark for France.

* * *

Frigeco Distributes G-E Products

HARRY A. GRANARY, managing director of Frigeco, S. A., whose Paris office was my headquarters, and RONALD WOODROFFE SUTTON, refrigeration engineer with International General Electric, both are close students of the NEWS, and get a lot of their sales ideas from it.

Mr. Granary is still interested in following the course of the retail refrigeration field in France, although IGE has been out of that side of the picture for some time.

Frigeco, trade name of General Electric refrigerators in France, sells through dealers exclusively, with about 180 firms throughout the country acting as its representatives.

General Electric, Ltd., the British manufacturing firm, has prior rights to the use of that name in Europe, so the very fortunate combination of letters FR-I-G-E-CO (French International General Electric Co.) was adopted.

The company handles General Electric refrigerators and all other appliances, with the exception of ranges, radios, and a few small items.

* * *

Westinghouse Values News' Service Data

Westinghouse distributor in France for domestic refrigeration equipment is JEAN LAVAL.

E. E. DYBWAD represents Westinghouse Electric International in Paris, headquarters of the organization being in Lourdes.

Mr. Laval, a NEWS reader for eight years, also handles Universal Cooler commercial refrigeration.

Service information in the NEWS, and particularly the MASTER SERVICE MANUAL, are among the features he values most highly. French service men have a real need for the information contained in the Service Manual, he thinks—and the only setback to its popularity in the country is the fact that service men can't read it, because it isn't printed in the mother tongue.

Mr. Laval is of the belief that a French translation of the Manual would have a real market.

* * *

Quota System Hits Norge Organization Hard

M. COLIN is managing director and M. LAURENT chief engineer of the Norge distributing organization in France, headquarters of which is in Paris. In addition to household and commercial units, the company also handles washing machines.

Quotas, duties, and prices are the bane of Mr. Laurent's life at the present time. His company is one which got a bad break when quotas were established on 1934 import figures. The quota established for Norge, in Mr. Laurent's opinion, is woefully insufficient to cover potential sales—and its supervision on a quarterly, instead of an annual, basis has been another deterring factor.

If he could obtain the equipment, Mr. Laurent believes at least twice as many Norges could be sold in France each year than are sold there at present. High duties on refrigerators do nothing to make the frugal French homeowner look more kindly upon American-made products, either, he says.

Two changes in American machines would also ease their acceptance in the French market, Mr. Laurent told us. In the first place, shelves should be constructed so as to allow for storage of tall bottles of wine or champagne; and secondly, motors should be supplied for both 110 and 220-volt current.

The company sells direct to consumers in the Paris territory. In French provinces and colonies, sales are through regularly established dealerships. In an effort to strengthen dealer representation, the firm now has a man constantly in the field, looking for likely "agents" in towns throughout the country.

Advertising and promotion by the company covers advertising in newspapers and trade periodicals, catalogs, and exhibits at most of the French fairs every year. As an added sales punch this year, the company has an entrant in the bicycle race around France. This man, well up among the leaders, has kept the Norge name before the public as well as any other promotion method used this year, Mr. Laurent believes.

Preponderance of the firm's yearly refrigeration business is done on a credit basis. Fully 70% of last year's sales, Mr. Laurent says, were closed on terms of from 60 to 90 days. Sales for cash totaled 20%, and about 10% were on terms of a year.

Development of the French market in the future, Mr. Laurent believes, is very much dependent upon the lowering of tariff duties, so that American refrigerators may compete more evenly with those of French manufacture. At the present time, he feels, the price (with imposts and duties added) is too high for volume sales.

...ITALY

Refrigeration & Air Conditioning

Refrigeration and politics in Italy are practically inseparable. Speak of one, and you must explain in terms of the other.

Because of Mussolini's determination to make Italy as nearly self-sustaining as possible, it is extremely difficult for American refrigeration and air-conditioning equipment to gain entrance into the country. A separate permit must be obtained for each piece of equipment imported, and these permits may be had only through Pull, Prayer, Personality, Pulchritude, and Payment.

Most Italian refrigeration manufacturers are small-shop assemblers. A few, however, are substantial concerns; and these are described in this chapter.

No Business

Sales of American refrigeration and air-conditioning equipment in Italy are practically non-existent. Mussolini's government has placed a strict prohibition upon the import of automobiles, radios, refrigerators and refrigeration products, copper tubing, and supplies.

Other items of import, like foodstuffs and textiles, are placed on a quota system, something like that which obtains in France.

This does not mean that *no* refrigeration equipment manufactured in the United States ever finds its way to Italian shores. Once-in-a-while a household refrigerator, or even a piece of commercial apparatus, is allowed to enter. But for each piece of equipment a special *permit* must be obtained before it may be unloaded from a ship.

Those permits are difficult to obtain. If you have friends in the government, and can state a logical reason, you may obtain a permit or two a year. You then pay $35 for the permit, plus 20% tariff on the refrigerator, and wait patiently. The refrigerator *may* come through.

In the case of a Monitor Top G-E refrigerator obtained on permit, the lowest price which the Italian General Electric Co. can place on a 5-cu. ft. box after all charges have been paid is in the neighborhood of $200.

Five or six refrigeration manufacturers in Italy together account for most of the 2,000 to 3,000 household jobs sold each year.

Commercial installations have hovered around the 10,000 mark annually for some years, with more than 100 different manufacturers contributing to the total.

* * *

Italian G-E

Around Europe one finds a number of manufacturing and selling organizations affiliated with the General Electric Co. of the United States. They import some equipment, manufacture most; and handle all merchandising activities in their own manner. Generally they have mutual patent agreements and exchange-of-ideas arrangements.

Such a concern is the Italian General Electric Co. This organization, located in the thriving industrial city of Milan, imports household refrigerators whenever permits can be wangled, and manufactures its own commercial machines—which are exact copies of the American designs. "Everything electrical" is also manufactured in the Milan plant.

Currently this organization is planning to manufacture a household refrigerator powered by a conventional compressor of its own make. A 4½-cu. ft. box, it will sell for 4,250 lires (about $325) with a one-year guarantee.

If as and when service troubles arise on a hermetically sealed refrigerator, the customer must be patient. It must be taken to the customs office, sealed, and shipped to America. After being repaired, it must be shipped back to Italy in the *same seals*. That takes about five months.

Practically all service troubles on these machines have been located in the motor—rarely anywhere else.

All the Italian G-E machines use sulphur dioxide as a refrigerant, as do approximately 60% of the compressors manufactured in Italy. Some 30% use methyl chloride, the rest ammonia. They are just now beginning to experiment with Freon.

Very little air conditioning has been installed anywhere in Italy. Board-of-directors room at the offices of the Milano Power Co., big public utility, has been completely air conditioned by the Italian G-E company.

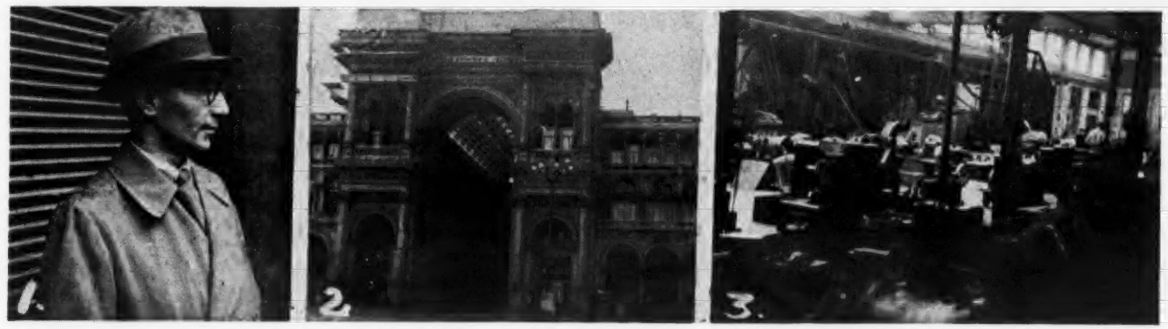
Schraemli & Foster, which manufactured Frigidaire products in Italy, has made an installation in Rome.

G. Dell-Orto & Co. has made some installations (see next page).

And that's just about the entire list of jobs which deserve the name, "air conditioning."

Cardenas of Turino is beginning to get into the business, specializing in elaborate ventilating machines which circulate air and water together through porous clay. Installations of this type have been made in a number of Italian theaters.

Milan—A Combination of Beauty and Industry



1. A. Tamai of the Westinghouse organization in Milan. 2. In the highly commercial and industrial city of Milan, a triumphal arch like the above is no mere ornament—it is commercialized. This one forms the entrance to an arcade of shops. 3. In this corner of the big Italian General Electric plant in Milan, compressors are made.

Aeromeccanica Marelli of Milan has made some installations which draw air over direct expansion cooling coils.

* * *

Wait for Business

According to the Italian General Electric people, specialty selling is simply not done in that country. One waits for prospects to come into the office.

Household refrigerators are sold—or purchased—almost entirely by this passive method. A wealthy client hears about these newfangled refrigerators, calls up headquarters and arranges an appointment with somebody he knows. If he decides he wants one after looking it over, it then gets down to the question of what discount he is to receive.

The haggling may extend over quite a period of time, with the discount being based on the "stand-in" he has at headquarters, the amount of his other purchases from the company, or how important a man he is. Of this type of customer, 95% pay cash.

* * *

Radaelli Most Important

R. Radaelli & Co., Milan, manufactures its own line of household refrigerators under the trade name "Algidus" in a factory employing 600 workers. This line has been made by the company for the past nine years. Besides refrigerators, the firm manufactures gas meters, bath heaters, chromium plated taps, and stamped iron cabinets.

This concern is easily the most important in the Italian field.

"Algidus" units are manufactured entirely in the company's plant with the exception of the motor, which is a Leland (Leland Electric Co., Dayton) and Ranco thermostats. Radaelli's Leland motors are made in Italy, under patents held by the American company, by Brown-Boveri, the licensees.

P. P. R. RADAELLI of the company reports that the Italian domestic market is heavily subnormal considering the hotness of the climate. He estimates that 3,000 domestic units are sold each year, and reports that his firm made 1,000 units last year, with bright prospects for 1937.

The company's new line will include streamlined models using a new type of highly finished hardware.

Mr. Radaelli says that he expects the importation of American units to decrease next year, due to the present unfavorable rate of exchange, which recently dropped from 13 lira to 19 lira to the dollar.

Five household units and one commercial box are included in the Radaelli line.

The domestic units have capacities of 70, 100, 140, 220, and 350 litres, and the commercial unit a capacity of 510 litres, net storage space. In styling the units are similar to American models of a year or so ago—with broom high legs, bottom-mounted condensing unit, and the ice cube chamber against the upper right wall, except in the largest model, in which it is against the left wall of the two-door cabinet.

* * *

Dell' Orto

One of the largest Italian refrigeration firms is G. Dell' Orto & Co., makers of the "Ortofrigor" line, with extensive factories at Milan. Both domestic models and industrial coolers are made by the firm, together with parts and fittings. The company was established in 1901. GUISEPPE DELL' ORTO is president.

Vertical ammonia compressors are among the chief products of the Dell' Orto Company, ranging in capacities from 10,000 to 250,000 h./frig. Another well-known "Ortofrigor" product is a double-acting ammonia compressor, with capacities from 60,000 to 500,000 h./frig. for each cylinder.

Other products made by the firm are condensers and evaporators for replacement and other installations. Small automatic cooling assemblies with an output of from 150 to 15,000 h./frig., using sulphur dioxide, methyl chloride, and Freon refrigerants, are manufactured in greater numbers by Dell' Orto than any other firm in Italy.

All automatic devices used in the line are imported from the United States, with especial preference given to Fedders thermostatic valves.

Special branch of the company is maintained for cabinet construction, where joinery and brass work operations are taken care of in the making of ice cream counters, cooling cabinets, doors, etc.

Dell' Orto is also engaged in the air-conditioning field, having just completed making air-conditioning apparatus with Freon compressors for the new aerodynamic trains on the Italian State Railways and for Fascist submarines patrolling tropical seas. Mr. Dell' Orto's home has also been air conditioned with Freon equipment.

During the recent war in Ethiopia, "Ortofrigor" cooling units powered by combustion engines went along with Italian troops into the most torrid parts of Ethiopia in the campaign against Haile Selassie.

Luciano Dell'Orto also went to Ethiopia at the close of the campaign, and made several large installations, notably in hospitals.

The company claims the distinction of being the oldest as well as the largest refrigeration factory in Italy, and manufactures all types of cooling plants with the single exception of carbonic acid machines.

Sales policy, according to the president, has resulted in the country being divided into various zones, each in charge of a sole agent who appoints sub-agents. Certain good sales producers receive a percentage commission on sales volume over a certain figure besides regular commissions.

A few years ago, "Ortofrigor" units were exported to France, Spain, the Blacanic Peninsula, and other points, but recent trade restrictions have hit the trade considerably. Mr. Dell' Orto anticipates a good business in the future and a growing export trade.

* * *

Fantini

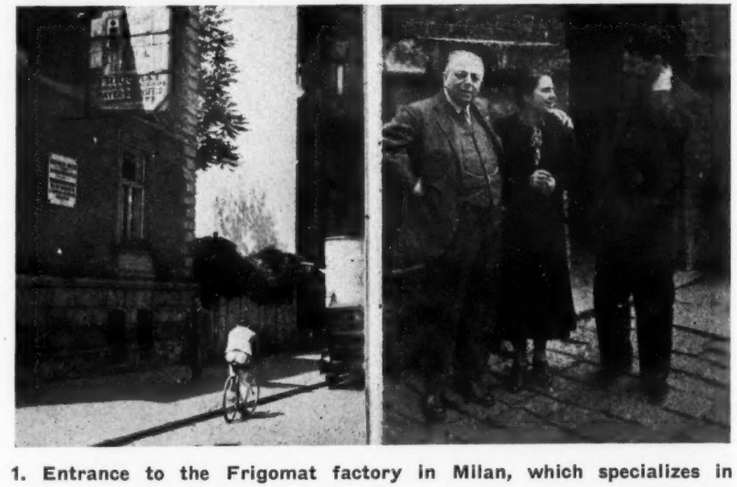
With a 30-year record in the manufacture of electrical apparatus for all kinds of industrial purposes, Alberto Fantini & Co. of Milan now makes a line of automatic switches, controls, feeders, and valves for refrigerating units and oil burners.

BRUNO FANTINI, son of the founder, has recently been engaged in translating K. M. Newcum's MASTER SERVICE MANUAL into his native tongue with the view of making it available later for use by Italian refrigeration service engineers.

The Fantini concern employs about 60 workmen in its plant with a clerical force of a dozen. Members of the Fantini family assumed control of its operations after the death of Alberto Fantini, its founder.

Although most sales are made through correspondence, the company keeps two traveling salesmen on the road doing contact work. Solicitation

Frigomat Factory and Its Leaders



1. Entrance to the Frigomat factory in Milan, which specializes in household refrigerators. 2. The Mayer family, which guides the destinies of Frigomat, come outside to greet the author.

of sales by anything approaching specialty methods is almost unknown to the firm, Bruno Fantini says.

The company's engineering department, headed by the son, designs all products for the Italian market. Efforts are being made, however, to interest American refrigeration firms in using facilities of the Fantini company to manufacture their products in its factory.

According to Bruno Fantini, about half of the refrigeration units sold in Italy are manufactured by Italian firms. He estimates that 4,500 commercial machines in the fractional and small horsepower ranges are sold annually. Domestic sales, he says, total only about 1,000 per year, the average base price of $250 being above the purchasing range of the majority of Italian families.

* * *

Jucker

A Milan parts firm, Giacomo Jucker & Co., employs a special manufacturing department and sales staff and keeps on hand a large stock of parts and accessories for the Italian trade.

The Jucker company does most of its importing of parts from American supply houses, and also obtains some of its products from England and Switzerland. It acts as agent for the British Thermostat Co. valves, pressurestats, and thermostats, are imported, with metal forging operations and manufacture of certain types of thermostats and electric switches being done in the home plant.

Recently a Jucker engineer (Dr. Marzorati) spent six months in this country observing American manufacturing processes and contacting refrigeration firms with which his company does business. At the present time Jucker serves the whole of Italy.

Giacomo Jucker is president of the firm, with Alberto Saibene acting as managing director.

* * *

Schraemli & Foster —They Made Frigidaires

When the wave of nationalism which engulfed Italy under Mussolini swept the refrigeration importing business out of the country, a couple of Milan bankers by the names of Schraemli and Foster negotiated for the rights to manufacture Frigidaire products in Italy.

Two years ago Frigidaire withdrew entirely from the field, and Schraemli & Foster took over the business.

In their Milan plant they have manufactured Frigidaire household and commercial refrigerators.

* * *

No Welcome Mat

This was one firm the writer failed to crack. Couldn't get past the non-English-speaking man at the front door, nor could I find anyone to arrange an introduction for me.

Through the Milan showroom window, however, I got glimpses of machines which seemed exceedingly well made. Fact is, the commercial compressors were neater in appearance than any I have seen in the United States.

According to reports, Schraemli & Foster is manufacturing according to its own designs, rather than those of Frigidaire, at present.

Westinghouse with a Dash of Perfume

Electrodamus S/A, a company which is primarily in the perfume business, distributes Westinghouse refrigerators in Italy.

Soon, I was told, Westinghouse hermetically sealed compressors will be manufactured in the great FIAT motor car plant at Turin. This factory had just begun turning out the sealed units when the Ethiopian war came along, and production had to be abandoned in favor of the manufacture of military supplies.

By this time, production should have been resumed.

At the time of my visit to Milan, there wasn't a Westinghouse appliance for sale anywhere—all sold out, and no import permits on hand.

Biggest Westinghouse merchandiser in Italy is C. Bosio of Milan, who has branches at Rome, Turin, Varese (a small town which does a big Westinghouse business), Busto-Arsizio, Biella, Bolzano, and Novara.

* * *

Tripoli Buys

According to A. Tamai, who represents Westinghouse International in Italy, exports of refrigeration products to Italian Tripoli have been highly gratifying in the last couple of years. The dealer down there is known by a long set of initials: S. A. F. E. I. T.

Water in Tripoli is both warm and expensive, which is said to be one reason why air conditioning hasn't made any strides down there.

Other Appliances

Kelvinator's business in Italy has been picking up recently, under the aegis of Fonodisco Italiano Trevisan of Milan. Norge is being sold by M. Osiatinsky, a Rumanian.

No washing machines are sold in Italy, and few vacuum cleaners. Electric range business is pretty good. Power companies act as dealers, selling to the public on very small instalments collected with the lighting bills. This procedure has been tried in a small way with refrigerators, too.

Electric rates are expensive in Milan—one kilowatt hour costing the equivalent of seven cents. Up in the northern provinces electric rates actually get down below one cent per kilowatt hour. On the other hand, in Sicily they run from 21 cents to 35 cents per kwh.

Three or four private power trusts, which submit to a measure of state supervision, have the electrical generating and distribution business under control.

These trusts act as holding companies for individual operating units.

Comfort for Italians

The above electric train, which connects Rome and Naples, also Bologna and Florence, has been completely air conditioned by Ing. Guiseppe dell'Orto, large Italian refrigeration and air-conditioning firm with headquarters in Milan. This train's maximum speed is 192 kilometers per hour.

. . . HUNGARY

Refrigeration and Air Conditioning

Proportion of hospitality to refrigeration sales reached a new world's record when the author arrived in Budapest, glamorous capital of Hungary.

Because of stringent import and monetary restrictions, Budapest refrigerator distributors have been virtually unable to obtain new models for the last two or three years. Nevertheless, these hospitable people practically suspended operations for four days and nights to give the visiting representative of the American refrigeration and air-conditioning industry a thoroughgoing view of the city and the country.

Those refrigeration distributors—both at home and abroad—who think they have annoying obstacles in their business paths should read this short description of the troubles of their Hungarian cousins. It should cheer them up immeasureably!

1931 Kelvinators— 1941 Night Life

First refrigeration distributor I called on was L. Reichard, who has the Kelvinator agency.

When I got there he was dusting off two of the three repossessed 1931 Kelvinators he had on display. Import restrictions prevent him from bringing new models into the country. But, say! Wouldn't I come upstairs and meet the wife? And stay for luncheon. How about doing the town tonight? I would, and did. And Mr. Reichard, his pretty wife, and their friends turned out to be as charming and pleasant as anyone I'd met.

The Reichards and their witty, cultured companions took me on a two-night tour of the restaurants and night clubs—and such a gay time we had!

Hungary itself is not large enough to supply Budapest's industrial plants with the necessary raw materials. As a result, most of this must be imported, which gives the country a perpetually unfavorable trade balance.

"It's very difficult for a merchant in Budapest," most of those engaged in that business will tell you, readily enough. Income taxes are very high. A sales tax on all goods sold is imposed at the factory, and the merchants are burdened with that from the moment the merchandise reaches their shelves. Then there is a luxury tax, and (as though that were not enough) a rent tax which amounts, in some cases, to almost 50%.

* * *

2000 Units in Use In All the Land

I had some trouble convincing Dr. Paul Szecsi, manager of Arthur Hahn & Co., Frigidaire representative in Budapest, that I was really the man who was making the trip around the world for the NEWS.

"*You* wrote those long articles?" he asked, unbelievingly.

He had a stack of copies of the NEWS on his desk almost a foot high. And he was more than glad to talk about the refrigeration market in Hungary. Together with the helpful Mr. Reichard, he supplied the information which follows.

Hahn & Co., in addition to handling Frigidaire, also has the Ford agency for Budapest and Hungary. Which situation is a little unusual, to say the least: Ford and General Motors under the same roof.

There are less than 2,000 mechanical refrigeration units in use today in all of Hungary—in fact, American-made machines in use number only about 1,000, I was informed. Only United States manufacturers represented in the country are Frigidaire and Kelvinator. Of the 1,000, it is estimated that about 700 are Frigidaires, and 150 Kelvinators. Electrolux, according to reports, has sold about 50, and Linde (the German company) about 20 or so, although the company does not now sell domestic units in the country.

* * *

Getting Machines Into Hungary Is Not Simple

Getting Frigidaires into the country, Mr. Szecsi told me, is a complicated, now-you-have-it-now-you-don't procedure. First the dealer applies for an import permit, making his attempts by a devious route. Then, even after he gets one, there's only a faint chance that the request will be granted.

The few permits the company has been able to obtain were for replacement parts. Most of these were purchased through the Harry Alter Co., Chicago.

To complicate matters further, payment for the parts cannot be made in American dollars. Companies can pay, however, in German currency, because of the trade agreement between the two countries and the exports Hungary makes to that country —pigs, legumes, bacon, etc.

* * *

Hungary Unprepared for Industrial Development

As Mr. Szecsi explained it, Hungary has been chiefly a food-producing country. In the last 10 years, however, its industrial development has come, and the country hasn't been able to get ready for it.

Textiles, glass (for export to America), sugar, white flour, shoes, furniture, guns, Diesel cars for railways (exported to the Argentine), radio tubes, and electric lamps (known as Tungstram) are manufactured at present—and, as previously mentioned, most of the materials have to be brought in from other countries.

Refrigerator factories, of which there are several in the country, all make less than 100 units per year, Mr. Szecsi said—most of them less than 50—and they are all hand made machines, built to order for individual purchasers. The high resultant price hasn't done much to popularize mechanical refrigeration in Hungary, despite the fact that the commercial price of 210 pounds of ice is about 161.80 pengoes, delivered. The pengo is worth about $0.2961, per value.

In addition to American machines, the chief manufacturers operating in Budapest are German—Bosch, DKW, and Linde, although the latter makes no household machines. Electrolux, the gas refrigerator, is another competitor.

No air conditioning has found its way into commercial use in Budapest. A couple of engineers have installed systems for use in their own laboratories, but purely as experiments and with no evident intentions of striking out for a larger market.

* * *

Electric Current and Its Distribution

In Budapest, electric current is distributed by a municipal company; in the provinces, distribution is in the hands of privately owned companies. Budapest has a special rate for electric refrigerators: .18 pengoes, about 3½ cents, per kwh. up to 5 kwh.; and 07 pengoes, about 1½ cents, for more than that amount. The regular electric light rate is .52 pengo per kwh.

Production of electric current in the country has increased a few per cent

Hungarian Refrigeration Distributors Handicapped by Stringent Import Restrictions

1. Dr. Paul Szecsi of Arthur Hahn & Co., Frigidaire and Ford (surprising combination) distributor in Budapest, wonders where and when he'll be able to get another Frigidaire to replace the one in his show window, if either of the two prospects gazing at it decided to buy. 2. L. Reichard, Kelvinator distributor, hasn't much left but this sign (and some repossessed models) to indicate he's in the business. 3. Sidewalk ice cream shop in Budapest, harbinger of the opening of a new market for commercial equipment. 4. Patrons of an ice cream shop in Budapest shop take more interest in their reading than in their eating. But it is true that ice cream is becoming more and more popular in the Hungarian capital.

during the last two years. This increase, however, has been due entirely to the increased consumption on the part of industry, as domestic consumption has remained practically unchanged.

Contrary to the custom in most countries, the cost of current increases with the amount consumed. Until recently, this was true both in Budapest and the provinces.

Recent reductions in Budapest, however, have made current for household appliances (refrigerators, vacuum cleaners, and electric irons) cheaper, although it is of the same voltage as that used for lighting purposes.

In selling electric refrigerators, Mr. Szecsi employs "spotters," who are working regularly at other jobs, to ferret out prospects for him on a commission basis. There is no such thing as a regular salesman—business is not good enough to support one.

Rebuilt American machines sell for about the same prices as do new Hungarian models; for instance, I noticed a 5-cu. ft. rebuilt Kelvinator and a new locally made unit, each priced at 900 pengoes, about $180 in American currency.

Because of the difficulty of obtaining complete machines, Frigidaire last year imported the refrigerating units, and made its own cabinets, Mr. Szecsi told me. The complete job sold, when assembled for about 1,500 pengoes, about $300. He admits it wasn't so good, because the cabinets were not well made. They had porcelain interiors, Dulux exteriors.

* * *

Service a Bigger Business Than Sales

The largest field for business at present, Mr. Reichard says, is service. Kelvinator sales during 1936 had been discouraging—only about five units—because of the low purchasing power of the average Hungarian.

Budapest dominates the Hungarian radio market, all models being manufactured by agencies in the city. Smaller models, using from two to four tubes, are the most popular. Selling prices of these models range around 450 pengoes. Electrolux is on the market in Budapest with a vacuum cleaner.

* * *

Electric Range Industry Looks Promising

The electric range industry is beginning to be developed here on a small scale, and three or four companies are producing models, I was told. The recent special appliance rates should prove advantageous to the new industry, it was felt.

At present, most of the country cooks with coal gas or coal. Gas, in Budapest, was about one-fifth pengo per cubic foot—about 5 cents, in American money.

There is fair market for commercial refrigeration equipment in Budapest's meat markets, restaurants, and confectioners; several ice cream cabinet sales have been made recently to merchants of the latter class. Water cooler installations, however, have been sparse—the number in use in the city was estimated at a dozen, two Kelvinators and 10 Frigidaires.

...SWITZERLAND

Refrigeration and Air Conditioning

With a highly intelligent population, a stable currency, a country unravaged by the World War, a steady influx of tourists' gold, and a national belief in the efficacy of electricity, Switzerland is an excellent appliance market. Only flies in the ointment are—yes, you guessed it—the tariff and the import quotas.

Just who gets the business, and how much, is told here. Because of quota restrictions, Frigidaire is practically the only American make of refrigeration equipment sold in Switzerland. Others have quotas which are highly restrictive.

Electrolux accounts for a big share of the household sales, especially in the German section of Switzerland (which has German, Italian, and French sectors), of which the capital is Zurich. Most of these units (fully 70%) have electrical heating elements; the rest use gas.

Autofrigor is the leading Swiss manufacturer of household refrigerators.

Swiss Sales

Zurich, Switzerland, is a very busy town. It is the metropolis of the German portion of Switzerland, is set on the end of a long lake, and is a thriving industrial city.

Partly because of import quota restrictions, Frigidaire was the only American make represented in Zurich at the time of my visit.

Quotas are assigned in kilos (according to weight), based on the imports of a particular company in 1931. Frigidaire was going strong then, and does not find the restrictions bothersome as others do. General Electric, Westinghouse, Norge, Stewart-Warner, and Fairbanks-Morse, for instance, have so small a quota as to make it scarcely worth while to set up an agency.

In addition to quota restrictions, an import duty of 200 francs ($66) for each 100 kilos (220 pounds) must be paid. Frigidaire's two best sellers in Switzerland have these cash prices: Standard 3—$240; Master 4—$950.

Most household refrigerators are sold for cash, although Frigidaire offers 24-month terms. There's a very good reason; i.e., according to Swiss law, if the customer makes one payment he is legally bound to make the rest.

Nevertheless, some 70% of the commercial installations are sold on credit.

* * *

Frigidaire Leads

According to Arnold Aeschbacher, Direktor of Applications Electriques S.A. Frigidaire Elektrisch-Vollautomatische Kohlung, and A. Zuerrer, Frigidaire sells twice as much equipment as its nearest competitor in Switzerland.

Since 1927, Frigidaire has sold more than 8,000 units in Switzerland, and more than 3,000 in Zurich alone. In 1935 Frigidaire sold 1,300 machines in Switzerland, of which 500 were installed in Zurich.

Household sales account for less than 35% of these figures; although the percentage is steadily rising.

Commercial sales are made entirely by direct selling, with salaried outside salesmen. On the other hand, no outside salesmen are employed to move household refrigerators, which are merchandised through display dealers.

Promotion consists chiefly of advertising in newspapers and trade papers, although direct mail is used to some extent.

Most household jobs sold are Ducofinished. There is a steady though smaller demand for porcelain, too. Convenience and pride of ownership are major appeals.

Some service trouble has been experienced with controls.

* * *

Ice, Solid CO_2

Little ice is used in Switzerland. Solid carbon dioxide is becoming more prominent in truck refrigeration, and for cooling ice cream in the "kiosks" (little sidewalk booths where periodicals, fruit, chocolate bars, and ice cream are sold).

* * *

No Air Conditioning

High prices and quota restrictions have all but kept air conditioning out of the country. Theaters have roofs which slide back to expose the sky on hot summer nights.

Postman Doesn't Need to Ring Here

(Left) The world-touring editor gets a welcome glimpse of an issue of Air Conditioning and Refrigeration News at the office of Arnold Aeschbacher, Frigidaire distributor in Zurich, Switzerland. (Right) Full view of the Frigidaire showroom in Zurich. Note glass-door household model in right window.

Among Frigidaire's leading Swiss competitors are Electrolux, Autofrigor, Therma Schwanden Glarus (Swiss manufacturer operating under Kelvinator license), Kaegi-Treulin (German Westinghouse), and Krieg (German General Electric).

* * *

Electrolux

Electrolux A. G., Zurich branch of the Swedish company, is directed by R. Schwenk. C. Blumer is refrigeration manager.

This firm has done most of its business with "flats" (apartment houses), employing two salesmen on an 8-to-10% commission basis, including traveling expenses.

Promotion is carried on chiefly through newspaper and magazine advertising. The latter are published in French, German, and Italian, to reach the three different Swiss population groups.

Approximately 70% of these Electrolux absorption-type household refrigerators are installed with electrical heating elements. (It is interesting to note that even so high a proportion as 30% are equipped with gas heating elements, for Switzerland is known far and wide as the Electrical Country.)

More than 50% of the Electrolux boxes have been installed in the German section of Switzerland. An especially good sales record has been established in the city of Basle, where the municipal gas works has promoted Electrolux heavily.

In Geneva and the French section of Switzerland, Electrolux ranks second to Frigidaire in household sales.

Autofrigor

Established in 1909 as a department of Escher Wyss & Co., the Autofrigor A.-G., the first manufacturer of small refrigeration units in Switzerland, soon spread its wings to become a separate concern, and expanded its activities until now the firm has factories in Germany, Paris, and Zurich, and has agents in most European countries.

Dr. R. Zoelly directs the Autofrigor A.-G. Zurich factory; that in Lindau on Lake Constance, Germany, is under the directorship of Dr. M. Metzenthin, and the Paris branch of the concern is managed by Dr. G. Champendal and Dr. L. de Weck.

* * *

Odd Shaft Seal

First refrigeration unit built by the company in 1909 was provided with direct electric drive, reciprocating compressors, and a shaft sealed with a gland. Chiefly because of the gland on the shaft, and because of the decomposition of the refrigerant (ethyl chloride and later methyl chloride were used), these early units did not prove entirely satisfactory, company engineers report.

The new unit which was then manufactured was designed so that the use of a gland on the shaft seal was eliminated, since it was found that with a gland-sealed shaft in the unit, water caused the decomposition of the refrigerant and the corrosion and resinification of the oil in the unit parts.

Characteristic feature of the Autofrigor, introduced for the first time at the Swiss Exhibition in Bern in 1914, is the inner casing of metal which is arranged between the rotor and stator of the electric driving motor. Welded connections eliminate the use of piping in the unit.

By means of special processes and equipment, the refrigerant and lubricating oil are rendered anhydrous and the unit is kept water free to a considerable extent, its manufacturers claim.

Seeking to introduce an inexpensive refrigeration unit, Autofrigor A.-G. next added Frigomatic refrigerating units to its line.

This unit has a reciprocating compressor driven by an electric motor. It is provided with a gland for sealing the shaft, and can be operated with most of the commonly known refrigerants.

Thermo-regulating devices are used in both types of refrigerators manufactured by this company.

COMPLETE REFRIGERATION & AIR CONDITIONING SPECIFICATIONS OF ALL MAKES & MODELS THROUGH 1936

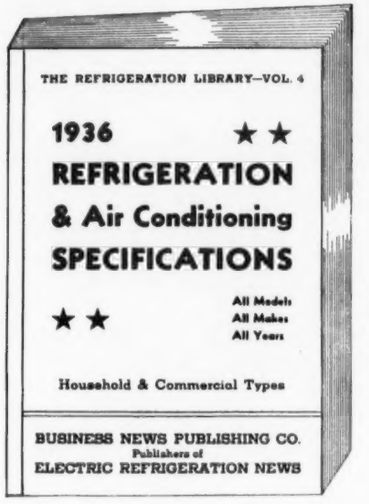
The first comprehensive compilation of key specifications for all models and makes of household and commercial refrigeration equipment and air conditioners through 1936.

This 512-page book was designed primarily for the use of service men in identifying operating characteristics and specifying replacement parts.

For example, it offers such pertinent data as the oil and refrigerant charge, belt size, and compressor model number. Then it also tells the make and type of such component parts as controls, motor, evaporator and condenser. The book will also prove valuable to dealers and salesmen in establishing trade-in values on used refrigerators.

In addition to the specifications of all models of all makes the Refrigeration and Air Conditioning Specifications Book offers a brief corporate history of all companies that have manufactured electric refrigeration equipment.

Manual S-1 contains 512 pages and originally sold for $3.00. The price has now been reduced to $2.00 in the United States. Add 50 cents to order for shipment any place outside of the United States.



Manual S-1

...NETHERLANDS

Refrigeration and Air Conditioning

The Netherlands, a land wrested from the sea by the ingenuity, industry, and persistence of a hardy race of people, is a very small country with an exceedingly big influence in world commerce.

Scene of the Seventh International Congress of Refrigeration, doors of The Netherlands were flung wide open to delegates, of whom the author was one, and all sorts of facilities were extended to enable visitors to see the country from stem to stern.

Frigidaire, Kelvinator, Copeland, Servel, General Electric, and Electrolux refrigeration units are sold in Holland—also several German makes, notably Protos, Bosch, DKV, and Ate.

Commercial business has been fine, household a bit slow in starting. It is a cool country. The people are relatively well-to-do, however, and proud of their homes and the equipment therein.

Standards of Living

Important differences in the manner of living will have to be made before electric refrigeration can be expected to make the gains in Holland which could be comparable to those already made in the United States, in the opinion of W. J. VAN WULFFTEN PALTHE, former Kelvinator distributor in the Netherlands.

Home owners are not used to refrigerators or ice water in their homes, Mr. Van Wulfften Palthe points out. Shops will bring food, in any quantity, any distance every day, so there is no need to store food over week-ends. Also, families buy from day to day. No one ever thinks of buying a big piece of meat to last for a week.

Potentially, there is a great market for electric refrigeration in the country. Of the 8,000,000 residents in the Netherlands, approximately 80% live in homes wired for electrical service.

Climatic conditions, however, are not overly in favor of the adoption of refrigeration, Mr. Van Wufften Palthe contends. Highest temperature in summer is about 80° F., lowest in winter, about 14° F. The warm months are from May to September. Average summer temperature is about 67° F.; average winter temperature about 34° F.

Importation of American refrigeration equipment began in 1927, the former Kelvinator distributor says. He was one of the country's pioneers in this respect. Before that time, some European makes were known in Holland, but these did not operate automatically and were all of the water-cooled variety, making them inconvenient for household use.

About 7,000 pieces of refrigeration equipment are in use in Holland at the present time, Mr. Van Wulfften Palthe says. Of this number, about 4,000 are commercial machines, and about 70% of them are used in butcher shops. Other commercial uses are principally in hotels and restaurants. Only about 3,000 household units are in use in the country, he says.

Firms selling American refrigeration equipment in the Holland market include: Rietschoten & Houwens, Rotterdam (Frigidaire); Marynen Waldorpstr., the Hague (Kelvinator); Mijnssen, Amsterdam (General Electric); Servel Tadema, Amsterdam (Servel); and Copeland Bouwman, Amsterdam (Copeland).

Sales of air-conditioning equipment in Holland, in Mr. Van Wulfften Palthe's opinion, are severely handicapped by the cold climate. There are practically no heat waves, he points out. Another deterrent to mechanical condensers is the constant water temperature prevailing in the country, 53° F., making this a good agent for refrigeration.

The few air-conditioning systems now in use in Holland are all equipped with a water-curtain system, Mr. Van Wulfften Palthe recalls. These include the Insurance 1845 building, the Tuschinsky Picturehouse, the State Railway office, and perhaps one or two others.

• • •

The American Way

Mr. van Palthe is a big, fine-looking chap who has earned a livelihood in many parts of the globe—in Java and the Orient, and in several European countries. At one time he was the Kelvinator distributor in Holland.

He is now interested in representing American air-conditioning manufacturers in the Dutch East Indies, and will welcome correspondence on that subject.

Holland is home, but "in Europe they make business too complicated" to suit him. He vastly prefers the American Way of doing things. "The long arm of the law," he says, is always reaching over your shoulder in Europe."

Mr. van Palthe went with me while I checked passport visas with consuls of the various nations I was to pass through next (Germany, Denmark and Sweden). After a spell of redtapery, he exclaimed: "See? That's what I mean. You wouldn't have to go to all that trouble to make a 600 mile business trip in the United States."

• • •

15 Men Per Copy

Present Kelvinator distributor, N. V. Technisch Bureau Marynen, is a big firm, live and alert. Mr. Harold S. Schwalbach of the distributorship says that they are really just learning about the business. When they know more about it, and if they can ease the prices down a bit, he feels that there's a potentially big refrigeration business in Holland awaiting his concern.

The NEWS has been of considerable help in educating himself and his organization, he claims.

"Each week 15 of our men read REFRIGERATION NEWS from front to back," he states. "Sometimes we think we ought to invest in another subscription!"

Some time ago he met Howard Lewis, Kelvinator treasurer and vice president in charge of export sales, at a banquet, and was considerably impressed. Mr. Lewis, he feels, understands the European market situation better than any American he has ever met.

Kelvinator household models are sold in Holland through dealers working on a 30% discount. Commercial salesmen work out of the home office on a strict commission-against-drawing-account basis.

Headquarters are maintained at The Hague, where a big showroom is literally filled with Kelvinator equipment of all sizes. This showroom however, is not exactly on a prominent corner. It took me an hour and a half to find it, even though I had the address, and though it is within half a mile of my hotel (The Terminus).

• • •

Electrolux Begins

Up until 1936, Electrolux wasn't much of a factor. But last year the Dutch gas utilities began active cooperation with and promotion on the Electrolux refrigerator, and they hope to get going in earnest in 1937.

A. F. M. Stubbe is managing director of the Dutch firm, N. V. Electrolux (also called Electrolux House). The firm is located opposite the Queen's palace at the Hague.

• • •

Holland Engineering

N. V. Hollandsch Ingenieurs Mij. (Holland Engineering Co.) has com-

pleted over 1,500 commercial refrigeration installations in this country,

Regular customers of the company include hotels, restaurants, butchers, shipping companies, and the Royal Dutch Navy. The firm also received an order for Her Majesty, the Queen of The Netherlands.

Holland Engineering Co. made an installation for Philips Electric Bulb Factories, Eindhoven, requiring the production of extremely low temperatures, and also installed the equipment for the country's first open-air artificial skating rink here.

For two years, Holland Engineering Co. has been selling Norge products. The company operates its own showroom and service repair shop.

M. E. A. W. MOHR and J. Ph. TOLLENAAR direct the company; F. HENNEMAN manages the refrigeration equipment.

Besides handling refrigeration equipment, the firm imports foreign machinery of various types, and maintains the sole Dutch agency for Babcock & Willcox, London, and James Howden & Co., (Land) Ltd., London and Glasgow.

Holland Engineering Co. also exports Dutch engineering products, especially cane sugar machinery to British India, and oil refining machinery to Roumania.

* * *

No Figures

From K. ALTES, managing director of the General Electric distributorship, Mijnesses & Co., Keizersgracht 205, Amsterdam, I learned most of my lessons on economic and political the Netherlands.

Mr. Altes, ably seconded by three henchmen, Messrs. MULDER, METSGER, and HAMER, spent the greater part of a day analyzing the current situation in his country for me. A fundamentalist in his economic thinking, some of his pungent statements would have assuaged the hearts of our own Liberty Leaguers and "economic royalists."

The Netherlands, you see, have had their New Deal, too. But more of that later.

Mr. Altes is quite conscious of competition from German electrical appliances, namely the Protos (an off-peak refrigerator), Bosch, Ate, and DKV. He has also noticed the rise of Electrolux. Competition from American makes hasn't bothered him much so far.

But he agreed with everyone else I interviewed over there that nobody really knows how he stands, because *there are no figures available on sales in the Netherlands.* Apparently it's a law, or something.

* * *

Other Appliances

General Electric refrigerators bring the biggest business to his firm of anything they handle. The oil furnace is just catching on, and some business has been done with the sewing machine. No room coolers or ranges have yet been sold by his organization. A G-E dishwasher was on display in the showroom, but none have been sold yet.

Swiss and German electric ranges are sold at prices ranging as low as 150 guilders; the G-E base price is 750 guilders, so you can see.

G-E commercial refrigeration equipment is sold on two-years' terms, 20% down. For awhile there was a general agreement among all refrigeration distributors in the Netherlands not to exceed these terms, but this agreement had broken down by the spring of '36.

Money was bringing only one-half of one per cent per annum at the bank at that time, and investors were looking for new risks, such as the time payment financing field, in hopes of getting a larger return.

Washing machine business in the Netherlands is at present being battled for by two types: the wooden, and the enameled (but not rust-proofed). Wooden washers, manufactured in the Netherlands and Belgium, are being sold for 35 guilders, with motors lacking starting torque. To start, the owner must give the belt a tug, or the motor will burn out.

General Electric washing machines were quoted at 135 guilders and up.

* * *

Utility 'Promotion'

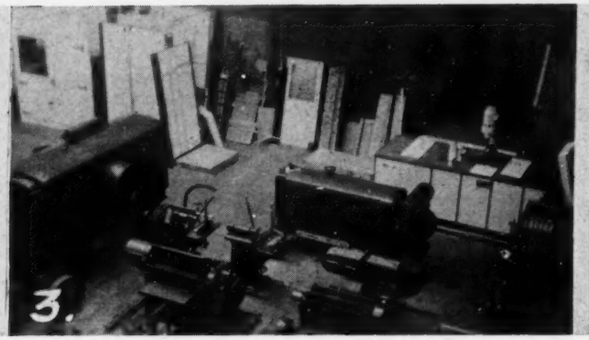
Most of the power companies are municipally owned, are "always broke," and spend practically nothing for promotion, new equipment, or extension of lines. Sole exception: water heaters, called "reservoirs" over there.

Because of utility promotion and selling, water heaters have gone over big in the Netherlands. A 40-litre model retails for 95 guilders; an 80-litre model for 125 guilders. Installation is free. A great many are rented

Activities of Refrigeration Industry in the Netherlands Conducted in Unique Surroundings

(1) Dr. J. F. Koopman, foremost Dutch refrigeration engineer, welcomes delegates to the Seventh International Congress of Refrigeration at The Hague. He is the very tall, hatted gentleman facing the camera. (2) Entrance to the building where the Congress was held. (3) This canal-street in Amsterdam runs past the headquarters and showroom of Mijnssen & Co., General Electric distributor. (4) The well-glassed, modern building at the right is a department store in Rotterdam, typical of the new architecture.

The Editor Looks in on Household and Commercial Showrooms in Rotterdam and Amsterdam



(1) Outside of the General Electric showroom in Rotterdam. (2) A prospect peeps through the Frigidaire display window in Amsterdam. This picture was taken from inside the showroom. (3) Commercial refrigerator shop of Van Rietschoten & Houwens, Rotterdam. (4) M. Saarloos and his partner, Crosley distributors in Rotterdam.

by the utilities at rates ranging from 90 cents per month.

Holland is also said to be "vacuum cleaner mad." Per capita use is unusually high, and there is a large local manufacturing industry, of which the Efa is the most popular. Electrolux leads those of foreign make.

Canvassing, declare Dutch distributors, is out of the question in their country. Practically all prospects have household servants, and the salesmen never get past them. Electrical appliances are sold chiefly through "household stores," which sell kitchen utensils, dishes, and the like.

Ice is available almost everywhere in the Netherlands. In Amsterdam 25 kilos (55 pounds) retail for about a quarter. This price is cut in half in some of the smaller cities where butchers own shares in the ice plants.

In Amsterdam the power rates are a bit complicated. A flat rate, different for every house (dependent upon the number of outlets) is charged, with supercharges for water heaters and other appliances.

Westinghouse

Groenveld & Co., large distributor of electrical and industrial machinery, represents Westinghouse Electric International Co. in Holland, specializing on the promotion of the Golden Jubilee line of household refrigerators. Directors of the firm are F. C. W. KOKER and P. J. GROENEVELD. Headquarters have been established in Amsterdam.

The firm has a working capital of $100,000, and operates its appliance business chiefly through salesmen, who act as its subdealers in principal Holland cities such as Den Haag, Rotterdam, Arnhem, Haarlem, Groningen, Utrecht, Roermond, and Zwolle.

In addition to handling Westinghouse products, Groeveveld is also Holland agent for Oil-O-Matic oil burners, Mueller Brass Co. "Streamline" fittings, and Detroit Lubricator Co. products. The company maintains a department for the installation and servicing of heating, refrigeration, and pumping plants.

Export Managers Note

Klisser & Citroen specialize in the sale of sewing machines, washing machines, and cleaners, but wish also to include a line of electric refrigerators, and any other appliances which they might handle advantageously, according to a communication received from this firm.

Turnover of household refrigerators in the Dutch market is not very rapid, officials of this company say, for while the Netherlands is a hot country, refrigerators are considered a luxury.

Very few large units are sold here, the communication revealed, but there is some demand for a 3-cu. ft. refrigerator.

* * *

'Frigoplate' Invented By a Dane

"Frigoplate," the refrigerated display slab gaining wide-spread attention in European commercial circles, was introduced to the market by Carp & Co.'s Handelmaatschappij N. V., a firm with headquarters here, which sponsors, pioneers, and sells the patent rights on mechanical inventions to independent manufacturing firms.

Invented in 1933 by Ingvardsen, a Danish inventor, the Frigoplate was introduced by Carp & Co., who since have arranged for and control its merchandising in 40 countries.

Designed so that the equipment can be connected to any refrigeration unit, the Frigoplate can be automatically adjusted to cool any perishable foods placed upon it. Similar to an ordinary display counter in having no glass cabinet or cover, the Frigoplate can be made available in any size, form, or design. It is suitable for use in meat and fish markets, restaurants, butcher shops, pastry shops, and bars.

Illustrating the successful reception which Frigoplate is receiving in markets where it is merchandised, J. R. Carp, head of Carp & Co., reports that there are more than 400 Frigoplate installations in Copenhagen alone.

The unit is being marketed in the United States by General Electric Co. under the name "Polar Plate," with the units being manufactured by Russ Soda Fountain Co., Cleveland.

One of the largest installations of Frigoplate equipment in England (where Frigidaire, Ltd. is sole concessionaire for the product) is that in the Billingsgate fish market, operated by J. Bennett (Billingsgate) Ltd.

Second product in the refrigeration line put out by Carp & Co.'s Handelmaatschappij N. V., is the Carpomatic ice cream vending machine, refrigerated by dry ice. Consuming only 7 lbs. of dry ice in 24 hours, the machine need be re-filled only once in 36 or 48 hours, its manufacturers claim.

The Carpomatic cabinet has a capacity large enough to hold 175 ice cream bricks. The purchaser inserts two pennies in a slot and receives his ice cream from another slot. The unit was developed under the supervision of Prof. Dr. W. J. de Haas, head of the Kamerlingh Onnes Laboratory in Leyden, Holland.

. . . SWEDEN

Air Conditioning and Refrigeration

Sweden is a cool country. It is not highly industrialized. Hence air conditioning hasn't gained much of a foothold there yet. But the cool climate hasn't hindered progress of refrigeration sales.

Imports of household refrigerators have been small, largely because Sweden is the home of Electrolux, which gets around 90% of all the household business in Sweden.

The romantic story of Electrolux, the two bright schoolboys who invented and developed it, and the vacuum cleaner salesman who built the company and its world-wide organization, is told in this chapter.

Hospitable Electrolux

Arrival in Stockholm was coincidental with the celebration of Midsummer Day, a national time of festivities which draws representatives of all Sweden to Stockholm for pageants, music, and dancing. It is the longest day of the year; and in Stockholm the sun was below the horizon for less than two hours.

All this provided an excellent chance to see the various breeds of Swedes in traditional apparel, and to observe them at play.

It also afforded Electrolux men a chance to entertain me. Dr. W. R. Hainsworth, vice president and laboratory chief of Servel-Electrolux in America, was there at the same time; and the two of us were dined, talked, and toured until we were ready to call it a week.

Nils Laurin, manager of the refrigeration department of Electrolux (which is also one of the world's largest manufacturers of vacuum cleaners, you know) probably did most to make our stay profitable. Managing Director H. G. Faulkner was also of particular assistance.

Others who gave us information—and time—included G. Sahlin, assistant managing director; A. Engberg, technical manager; S. Widdell, sales manager; M. Beckstrom, laboratory chief; and Gunnar Gruwe, manager of sales in Sweden.

All in all, it was as hospitable a crowd as any I've ever met in the air-conditioning and refrigeration industry—anywhere in the world.

Fairy Tale

The story of Electrolux is like a fairy tale. This ingenious mechanism for household refrigeration—the only successful absorption system which can be manufactured by mass production methods—probably ranks second to Frigidaire in number of refrigerators in use around the world.

It was invented by two college boys.

These lads, B. von Platen and C. G. Munters, devised a working model of the first Electrolux as a project to qualify them for a degree from a technical college! They got the degree, all right, and a fortune, too.

Munters has never left the Electrolux fold, having worked ever since on refining and further developing the product. Platen, who is more or less a "Bohemian" of artistic temperament, has used his royalties to further his laboratory research into other problems—notably a direct current high voltage machine.

Platen and Munters completed their project in 1922.

* * *

Enter Mr. Wenner-Gren

Nothing much was done about marketing their invention until A. L. Wenner-Gren, present chairman of the board of A. B. Elektrolux, came along. Mr. Wenner-Gren was the specialty salesman who started out by purchasing a hundred vacuum cleaners, and ended up by owning the company which manufactured them.

Sensing the possibilities inherent in a household refrigeration device (remember, this was the early 1920's, when the idea hadn't even caught on in the United States, let alone Europe or elsewhere) he experimented with the model, tested it.

In the autumn of 1924 he acquired sole rights to its manufacture, paying cash, shares in A. B. Elektrolux, and arranging for royalties.

Since that time he has built the business into one of the greatest institutions of Sweden, and easily the most international one. A. B. Elektrolux, with factories in Sweden, Germany, England, and France, produces and distributes the refrigerator all over the world, except in the Americas.

Manufacturing rights for North and South America are held by Servel, Inc., of New York City and Evansville. Mr. Wenner-Gren, however, has a large bloc of stock in this corporation, and keeps an active hand in the control.

Mr. Wenner-Gren is one of the leading citizens of Sweden. He is an adviser to the government, close to the crown, and prominent socially. His interests now are extended into a variety of enterprises.

* * *

Business vs. Politics

Mr. Faulkner, the managing director, is an Englishman. He came over to Sweden to join Electrolux as an accountant; and rose to become the chief of all operations of both the refrigerator and vacuum cleaner divisions.

He is a comparatively young man, as is Mr. Laurin; but has the gravity and composure of a much older man.

It's his experience that 90% of the time of an executive whose business is international must be devoted to finding ways and means of operating despite governmental restrictions. Not that Sweden makes it so tough to do business—but oh, boy!—what troubles they have in other countries in Europe!

Raw materials are more costly in Sweden than they are in the United States, he finds. Moreover, the rise and spread of economic nationalism in Europe makes for small markets. A manufacturer in Europe thus seldom is able to get production up to a point where prices can come down much.

Comparatively cool is the climate in Sweden, which has been no help to the development of the home market. That's been done by intense specialty salesmanship. But Mr. Faulkner doesn't feel that even the latter could create much of a demand for refrigerated air-conditioning equipment in Sweden. It's just too cold.

Cabinet construction need not be held to such strict standards in Sweden as elsewhere, however, because the low external temperatures put no heavy strain on the box.

* * *

90% Captured

Nils Laurin claims that Electrolux captures 90% of the household refrigeration sales in Sweden. This, despite the fact that American and German makes are sold there at competitive prices. Sweden being a low-tariff country, the duty on foreign makes is only 10% of the invoice price.

In the larger cities Electrolux maintains its own branch operations. Elsewhere in Sweden are 120 dealers who sell and service. No consignment business is done.

Ironmongers, who happen to maintain big stores in Sweden, are the most numerous classification of dealers. Others are electrical shops and steamfitters.

Most Electrolux refrigerators in Sweden employ an electrical heating element; although some gas-fired jobs are used, depending on the relative

rates quoted on the two varieties of power. Elsewhere in Europe about 17% of the Electrolux installations are gas jobs.

Absolutely no retail price-cutting is permitted, Mr. Laurin declares. Discounts just don't go in Sweden.

Sizes range from 1½ cu. ft. (the only size sold in Germany, and the most popular in Sweden and England) to 5 cu. ft. The smallest size box is sold chiefly to two-room apartments. Mr. Laurin feels that there is a real need among Swedish bachelors and couples living in a single room for a 1 cu. ft. box.

Electrolux is fortunate in having a mechanism readily adaptable to these extremely small sizes.

Motor-compressor systems do not find it economical to provide refrigeration for boxes of less than 2 or 2½-cu. ft. capacity.

* * *

Low Selling Costs

Electrolux Svenska Forsaljnings A.B., Kylavdelningen, is the jaw-breaking name of the Stockholm Electrolux selling organization which Gunnar Gruwe heads.

More than 2,500 refrigerators were sold in Stockholm in 1935 by his crew, at a valuation of a million kroner. This included the complete equipping of 80 apartment houses.

Two of his salesmen accounted for more than 1,000 refrigerators each, all to apartment houses.

Mr. Gruwe has sales crews in Malmo and other Swedish cities, also. Altogether, his outfit sold more than 5,000 Electrolux refrigerators in 1935. Some 4,500 of these were to apartments; 500 to individual homes.

He claims that the selling cost per refrigerator in 1935 was less than five per cent!

This figure, it should be noted, is for Electrolux refrigerators sold in Stockholm, most of which went into apartment houses on block orders.

* * *

Frigilux in France

Swedish Electrolux factory is located in Motala, between Stockholm and Malmo. English factory is just outside of London. German factory is in Berlin. French factory is at Courvevoie.

In France the Electrolux is called Frigilux.

General Manager of the French company is A. Papillon; sales manager is R. Biny; and the factory manager, a Swede, is S. Lange.

French gas utilities cooperate with this company, to the extent of helping with advertising, promotion, service, and installation. Partly as a result, 50% of the installations in France are of the gas-operated machine—by far the highest gas percentage in Europe.

In Paris the gas utility pays Electrolux a premium of 75 francs and up for each refrigerator installed. This sum is turned over to the advertising fund.

Built-In Kitchens Conserve Space in Modern Swedish Apartment Houses

Builders of Swedish apartment houses have been exceedingly clever in saving space, as the above pictures demonstrate. Electrolux designed and provided the built-in refrigerators.

A similar scheme is in operation in Belgium. Information on the Electrolux operations in Germany and England—where large factories and closely-controlled merchandising organizations are maintained—will be found in the chapters devoted to a survey of the refrigeration situation in those countries.

* * *

Frigidaire in Sweden

Because of Electrolux dominance in the household market, Frigidaire doesn't pay much attention to household sales in Sweden, I was informed by H. Roos, engineer of the Frigidaire distributorship.

In commercial sales, however, Frigidaire claims leadership. No air-conditioning installations had been sold at that time.

Under the leadership of G. Jonell, director, five commission salesmen are maintained in Stockholm to sell commercial equipment.

At the time of my visit, Frigidaire had 14 dealers working with Mr. Jonell, half of whom also handle service.

Little complaint against governmental restrictions could be found by the Frigidaire men. They simply pay the 10% duty, and that's all there is to it.

Frigidaire seems to be no more conscious of competition in the commercial field than Electrolux does in the household market. Occasionally the agent for a German machine underbids Frigidaire, but not often.

* * *

Radios

Aga and Ericsson radios are among the leading makes sold in Sweden. Philco goes good, too; with Asea and Telefunken (German) following closely behind.

All broadcasting in Sweden is under direct governmental control. No advertising is allowed on any of the programs.

Electrolux leads in vacuum cleaner sales. German manufacturers supply the ranges and small appliances.

Alfol (aluminum foil) insulation is largely used, with some cork. Alfol is a German patent, but is made in Sweden by several different manufacturers, including one of the large Cooperatives.

* * *

Says the Consul

The market for American electric household appliances in Sweden is limited, declares the American consul, Walter A. Leonard of Stockholm. Domestic production practically excludes all foreign competition.

Electric fans are an exception and, incidentally, one of the few electrical items separately listed in the official import statistics.

Swedish imports of electric fans in 1935 amounted to 213,702 kilograms, valued at 703,406 kroner. The chief sources of supply were, in the order named, the United States, Germany, and The Netherlands. Imports from the United States in 1935 amounted to 55,329 kilograms, valued at 262,574 kroner.

* * *

Power 'Taxes'

Electricity rates are called "taxes" in Sweden. Here are the varieties of "taxes" that are applied in the city of Stockholm to households and similar consumers.

Tax 1. ("Belysningstaxa").

This tax is applied when the electric current is only to be used for lighting purposes, and in homes where the consumer has no electric range or refrigerator. The price is 25 ore (6 cents) per kilowatt hour.

This tax is independent of the number of rooms.

Tax 2. ("Vaningstaxa").

This tax is applied when a certain amount of energy is consumed for purposes other than for light, although installation of Electrolux refrigerators generally allows the use of a still cheaper tax.

This price is 12 ore (3 cents) per kilowatt hour. If a refrigerator of any make other than Electrolux is used, this tax is applied.

In addition to this tax the consumer also has to pay a certain sum depending on the number of rooms, which can be roughly calculated as between 5 and 10 kroner per room.

Tax 3. ("Hushallstaxa A").

This tax is applied when the net consumption of energy amounts to at least 200 kilowatts per year. Consumers having Electrolux refrigerators are in this classification.

This tax is also applied to big households consuming large quantities of energy for cooking purposes, etc.

The price for this tax is four ore (one cent) per kilowatt hour. The minimum amount has to be paid for, even if it is not consumed. For every kilowatt hour consumed above the minimum amount the price is 12 ore (three cents) per kilowatt hour.

In addition to this figure the consumer has to pay a so-called energy tax, and a tax depending on the amount of rooms. These two taxes together amount to approximately 10 to 15 kronor per room per year.

Tax 4. ("Hushallstaxa B").

This tax is applied to very small homes (of one or two rooms), where a great deal of energy is consumed for cooking purposes, and is, therefore, somewhat cheaper than the above tax.

...GERMANY

Refrigeration and Air Conditioning

Germany, land of a desperately regimented populace, is also the home of high technical development, scientific progress, and advanced industrial processes.

The American refrigeration engineer who goes to Germany will be intrigued no end by the innovations in production technique and product design he will find there. In addition to advanced absorption-type refrigeration systems, slick and tiny vacuum cleaners, and powerful midget radios, the visitor will find such oddities as an off-peak refrigerator, and a combination electric and coal range.

Low average incomes, combined with a comparatively cold climate, have stunted the growth of Germany's refrigeration business, both household and commercial. Trade restrictions have further prevented American development of the market. Only 117 machines came in from the United States in 1935.

In this chapter, a condensed analysis of most of the German refrigerating machines on the market is presented.

Matter-of-Fact

Personalities are submerged in German electrical, refrigeration, and appliance organizations. About their machines—yes, they'll tell you. And with much pride. About their people, their sales executives, their designing engineers? Well, no; you wouldn't be interested, they say.

Scarcely any American electrical appliances come into Germany, of course. Tariff and import restrictions in Germany are practically equivalent to prohibition. So Frigidaire has its own factory in Berlin—which I visited—and gets a lot of the business, as Frigidaire does everywhere.

Other leading refrigeration firms are AEG (which has a working agreement on designs and patents with the General Electric Co. of the good old U.S.A.), DKW, Bosch (which puts out a cylindrical cabinet and a machine which operates on an off-peak-load cycle), and Electrolux, which also has a factory in Berlin. AEG is so gigantic and so important that you shall hear about it in detail—now.

* * *

Giant Aeg

Universal Electrical Co., known throughout the world under the designation AEG, was founded April 19, 1883, by Emil Rathenau as the "German Edison-Company for Applied Electricity" with an initial capital of 5,000,000 marks. Its original purpose was to commercialize the lighting system invented by Edison by furnishing incandescent lamps and erecting power stations for the production of electric current.

This basis of the undertaking soon proved too circumscribed, especially the stipulated conditions which had to be entered into for the acquisition of the licenses. In the long run they proved to be an unbearable restraint upon the young enterprise. Hence the agreements were placed upon a new basis which enabled the free development of the company. As an external expression of the newly founded relations the name of the company was changed on March 23, 1887, to the "Universal Electric Co."

The patents, for which the company up to that time had possessed a general license, passed into possession of the new enterprise. Stock capital was increased to 12,000,000 marks. At the same time the Wedding Machine Factory was acquired, together with the land belonging to it, which was bounded by the Acker, Hermsdorfer, Feld, and Hussiten Streets.

At the beginning of 1888 the production of dynamo-machines and motors was begun by AEG. Broader fields of production were added, and new factories for the production of electrical products were erected. More central power stations in Berlin, in the nation, and in foreign countries followed the first power stations, which had been erected for the capital city alone.

* * *

Electric Railways

Next field to be exploited was electric railways, for which the AEG made use of her acquired German Local and Street Car Joint Stock Co. In the field of transmission of current a great step forward was taken in the year 1890 by the new rotary current system, developed by the AEG engineer, von Dolivo-Dobrowolsky.

This system was initiated at the Frankfurt Electrical Exhibition in 1891 with the transmission of water power current from the 175-kilometer-distant power house of Lauffen on the Neckar, to Frankfurt on the Main.

The best picture of the company's rate of development is given by the increases in capital, whose rate and tempo manifested themselves in equal measure in the expansion of the ground work business (power works, railways, industry works) as well as in the enlargement of the production factories, especially in the erection of the large factories in Brunnen Street, the cableworks at Oberspree, turbine factories, transformer factories in Oberschoneweide, and of the factories in Henningsdorf.

In 1890 the capital stock of the company, founded seven years previously upon 5,000,000 M, amounted to 20,000,000 M; in 1900 it was 60,000,000 M, and in 1914 at the outbreak of the war 115,000,000 M. At the conclusion of the inflation period following the war the capital stock had, after the change in gold valuation, the same worth with 156,259 million M as it had before the war. In 1927 and 1929 further increases brought the capital stock to 200,000,000 marks.

* * *

Several Factories

During the recent period of expansion has come the erection of a large factory in Treptow, as well as large additions to the Brunnenstrasse (Brunnen Street) factories, to the Oberspree Cable Works, and to the transformer factory in Oberschoneweide.

The groundwork area, which belongs to the company, covers a total of 4,000,000 square meters; the number of employes working in AEG concerns numbers more than 80,000.

Factories maintained by the AEG include:

1. The Treptow factory, which makes control apparatus, mercury vapor tube adjusters, measuring instruments, cinematic film projectors, relays, Telefunken apparatus, and radio parts.

2. The Brunnenstrasse works, which builds railroad materials, lifting machinery, large-scale machinery, fractional-horsepower motors, and air dusters.

3. The Hennigsdorf works, which fabricates electric and steam locomotives, special instruments, tramways, powdered carbon combustion engines, industrial furnaces, tanks and accessories; products in Novotexite, Micanite, Tenacite and porcelain; insulating lacquers, silk and fabric insulation, insulating tubes; welding machines, stamping machines, nuts and bolts, mechanical and electrical signals for railroads.

4. The Oberspree cable works, manufacturing live and insulated wire and cable, enameled wire, rails, sheet-irons, tubes, metal ribbon, stamped

and impressed pieces, material for aerial and railroad lines, casting aluminum, brass and bronze, copper, Silumine, Electrone, white metal, tapping metal, ebonite products, Stabilite and rubber asbestos, insulating paper tubes sheathed in lead or brass, trim, running cables and their accessories, Pupin spools, amplifiers, and cable drums.

5. The porcelain works at Henningsdorf, which concentrates on electrotechnical porcelains.

6. The transformer plant, which makes transformers and high-tension equipment.

7. The turbine factory, which builds steam turbines, auxiliary motors, pumps, compressors, air ventilators, turbo-generators, heavy oil machines, and turbo-dynamos for locomotive illumination.

8. The Ackerstrasse works, which consists of:

(a) Comptometer factory,

(b) Carburetor and feed pump factory, and an

(c) Electrical clock factory.

9. The Annaberg plant, which makes contact breakers, accounting tables, and apparatus for laying conductors.

10. Crottendorf works, which makes fusible shields, contact screws, fusible plates.

11. The Scheibenberg plant, which makes sockets and portable lamps.

12. The Freiberg works, which makes fusibles and "Elfa" automatons.

13. The factory at Mulheim-on-the-Ruhr, which is maintained for the repair of machines, transformers, and electrical apparatus.

14. The Stuttgart works, which makes lighting equipment by magneto and by accumulator, dynamos, electrical accessories for automobiles, repair facilities for machines, transformers, and electrical apparatus.

15. The factory at Nuremberg, which is devoted to electrical apparatus for firing and cooking.

Quite on array, what?

* * *

Santo Refrigerators

Today, AEG manufactures a wide range of electrical household appliances, including refrigerators, cookers, heating equipment, ranges, and toasters. AEG's leading appliance is its "Santo" refrigerator.

Standard "Santos" range in cabinet size from 0.12 cubic meters, approximately 4.24 cu. ft., to 0.62 cubic meters, or approximately 21.9 cu. ft. They are completely automatic, the entire mechanical unit being installed in the top of the lidded box, while the freezer itself is mounted in the upper right-hand corner of the cabinet.

Under normal conditions, the temperature is maintained at about 6° C., or 42.8° F., although naturally the freezing compartment is much colder.

Two of the smaller refrigerators constitute the "Santo Junior" line, their cooling capacities being 130 liters, or about 4.6 cu. ft., in the "Grosse 1" box and 205 liters, or approximately 7.24 cu. ft., in the "Grosse 2."

Both "Juniors" have freezing capacities of 2 kilograms (approximately 4.4 lbs.) of ice, the maximum number of cubes being 52. Their cabinets are of similar construction, consisting of two fitted frames of sheet steel separated by a thick layer of insulating material. The outer frame has a finish of a manifold coating of white enamel; three coats are applied to the inner case.

Though the corners and edges of the cabinet are rounded, they are not curved, and the general appearance of the refrigerator is one of old-fashioned squareness. This impression of out-modedness is made firmer by the fit-over lid, the square, protruding hinges, and the high, spindle legs.

* * *

AEG Products

"Grosse 2," the larger of the "Juniors," has an overall height of 1,415 millimeters, or about 4 ft. 7¾ in. "Grosse 1" is 100 millimeters shorter, its height being about 4 ft. 4 in. Because of this shortness, the cabinet doors can be opened by pressing the handle with the knee, even though the handle is in the center of the machine.

Net weight of the complete "Grosse 1" refrigerator is approximately 270 lbs., the cabinet weighing 147 lbs. and the mechanism 123 lbs. Gross, or shipping weight is considerably more, the assembled appliance weighing about 664 lbs. The cabinet weighs 222 lbs. net weight of 336 lbs., and the mechanical unit weighs 194 lbs.

"Grosse 2" is heavier yet. Its net weight is 354 lbs. and its gross weight 664 lbs. The cabinet weighs 222 lbs. net and 462 lbs. gross. Net and gross weights of the machine are 132 lbs. and 202 lbs. respectively.

Handle, hinges, and other trimmings are of polished chrome, and the shelves are of tinned wire in grate form. There is, in "Grosse 1," only one full shelf in addition to the bottom, or floor, of the cabinet interior. Under the freezer is a half shelf to hold a tray, and stepped down from that is another half shelf. In the top left hand corner is a tiny quarter shelf.

* * *

Compact Machine

AEG's refrigerating machine itself is a compact unit consisting of a motor, condenser, evaporator, regulator, and liquifier all affixed to a single base in the top of the cabinet. Condenser and impulse motor are mounted upon a frame suspended on springs, thus eliminating noise and vibration.

Of simple construction, the rotary condenser has a high efficiency and a high measure of cold production. The motor has exclusively internally-moved valves, and almost all joinings are either welded or securely soldered.

Moving parts are few, and they are lubricated by a spontaneous flow of oil carried from the condenser housing through grooves and channels.

The impulse motor is adaptable to either type of electric current, and can be operated as a one-phase condenser or as a continuous current compound motor. The impulse of the condenser comes from a rubber wedge belt.

Consisting of a coil of ribbed pipes, the liquifier is mounted behind the motor so that the ventilator on the shaft end of the motor sucks a powerful current of air through it, thus increasing the efficiency of the ventilator.

Passage of the liquified refrigerant to the condenser is regulated by a spontaneously operating float valve installed on the ground bed of the machine.

Suspended from the underside of the ground bed, the evaporator is shaped to facilitate lively circulation of air in the cabinet and to enable quick, thorough cleaning. Trays are made of aluminum.

Regulation of the machine is controlled by a thermostat connected to the evaporator, the device turning on or shutting off the motor according to the temperature. Hand control of the temperature and the machine is made possible by two buttons on the front panel of the cabinet just above the door. One button is for temperature increase and decrease, and the other is the on-and-off switch.

Ordinary-sized refrigerators can be operated in the warmer seasons on an electricity bill averaging from seven to 10 schillings per month. At the normal rate of exchange, this amount would be equivalent to from $1.61 to $2.30. During the winter, the cost of electricity drops to about half this sum.

* * *

The Table Hearth

One of the smallest, most compact, yet most serviceable of AEG's household appliances is the household grill with incandescent rod heating. It is almost a cube in shape, its dimensions being approximately 10 in. in height and 11⅛ in. in width and depth.

Side walls of the grill are finished in ivory enamel, and both the top cover and the back wall are black enameled. The interior of the unit is also finished in black enamel. The front is open to admit the grill pan which fits into the chamber on wall runners, like a drawer slides into a desk.

The pan, which, with a ground-enameled roaster, is provided as an accessory with every grill, has a black wooden handle and ivory enameled body.

Consisting of an electric table hearth and two cooking plates, AEG's electric hearth for household use has automatic temperature regulation. A large aluminum cover mounted on a swivel hinge on the back of the unit can be swung down to cover the plate in which are set the cookers.

Purpose of the cover is to retain heat while pots rest on the circular cooking plates. Hardly any work or care is required of the housewife to operate the stove. She just puts the pans on, closes the cover, and switches on the electric current.

The rest of the cooking is taken care of by the device, for it is continually turned on and off by the automatic regulator whenever a temperature too low or one high enough is reached. No stirring or watching over the pans is necessary.

Beneath the heaters is a steam drawer which pulls out from the left side of the stove just below the switch.

AEG produces two table hearths, in different sizes, both fully automatic and practically identical in construction to the standard machine. The larger of the two table models has its exterior sides enameled an ivory color, its feet and exterior of the steam drawer nickeled, and the hearth plate finished in black enamel. The removable aluminum cover is double-walled and is insulated with esparto, a material fabricated from certain types of Spanish and Algerian grass.

Feet, removable plate, and hearth of the smaller table model are in black enamel, the sides and steam drawer exterior being finished in ivory-colored enamel. The cover is practically the same as that of the larger hearth.

Optional with the larger hearth is a black-enameled additional plate with a built-in, special burner which can be attached to the regular frame and used for the preparation of smaller portions of food independent of cooking in the automatic hearth.

Built for a full-sized kitchen, the AEG combination coal and electric hearth has a firing compartment in one portion and an electric range in the other. The hearth is used for cooking and as a room heater.

Hard coal is the best fuel for the furnace, which is a filler fire-room with a shaker grate and fire clay walls. During the warmer weather, the cooking fire may be elevated in the stove by inverting the summer grate with which every unit is equipped.

To make the heat cover the greatest expanse possible, the hearth has a precipitate draft system. An ascending and descending draft is placed directly behind the firing compartment, and the smoke withdrawal canal is laid along the entire back wall of the hearth.

Besides this, and for the same reason, there is arranged between the coal and electric parts of the hearth an intervening chamber acting as a sort of chimney and permitting the hot air to course from top to bottom. This chamber is not visible from the outside. It also serves as a protector for the electrical arrangement, keeping out a great deal of the stove heat that might harm the wiring.

All sides of the firing portion are arranged to reflect heat into the kitchen. Draft is provided by a slide in the ash door at the bottom. It can be turned off by a valve so that the smoke is carried directly to the chimney, taking with it some of the heat and thus decreasing the temperature in the room.

Two cooking plates are set in the coal hearth, and they are removed by a ring lifter. The electric range also has two cookers, and in addition it has a broiling oven below the switch panel.

Front and side walls, broiling oven door, and switch panel are done in white enamel. Feet, broiling oven frames, hearth plate, and hearth well of the electric range have a coating of black enamel.

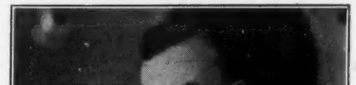
Black graphite is used as a finish on the fire compartment, hearth plate, and smoke outlet of the coal stove.

* * *

Electric Ranges

Small electric cookers with a capacity of 25 liters, or about 5½ gallons, form another line of AEG products. They are used as hot water storage tanks for kitchen use.

Noted Scientist



Prof. Rudolph Plank, director of refrigeration research at Germany's famous Karlsruhe Technical Institute, is one of the leading refrigerating engineers of the world. He was first to propound the theory of quick-freezing of foods.

AEG's larger electric cookers, used in hotels, boarding houses, restaurants, hospitals, etc., have served with considerable efficiency. One type of such cooker is an electric boiling kettle for large kitchens. It has a capacity of 150 liters, or approximately 33¾ gallons, and runs on 15 kw.

Another product is a hot water steam storage tank for the maintenance of a number of spigots. Its capacity is 400 liters, or 90 gallons.

For large kitchens, restaurants, and such places, AEG makes a large electric cooking hearth with six big cooking plates. Operation of the stove requires 28.5 kw.

* * *

Santo Promotion

Electric refrigeration, from the merchandising standpoint, is not far out of the pioneering stage in Germany, so a major part of the AEG promotion material is still concerned primarily with selling the idea of refrigeration to prospects.

One of the company's promotion pieces discusses in considerable detail the operation of the Santo-Junior refrigerating system, describes the temperature-regulating mechanism, and shows a chart of the even temperatures maintained by a unit during several days' operation.

The cooling unit is explained, and some details of its installation shown. Following that is an outline of the refrigerator's convenience features, such as ease of cleaning the interior, how the door may be opened when the housewife's hands are filled with dishes, and the number of ice cubes available for use by both sick and well ("Gesunde und Kranke," the booklet calls them.)

Testimonials from satisfied users of Santo-Juniors are printed in the back section of the booklet.

Another AEG promotion piece features Freda, the fat-cheeked German maid who has become one of the best-known figures in German appliance advertising, and pictures her delight at all the food she can keep safely in her Santo refrigerator.

A novel arrangement on the inside two pages of the folder has a Santo-Junior model taking up all of one side, its food compartment door opening to disclose all the various types of provisions which might be stored inside. Shown are meats, dairy products, vegetables, frozen desserts, fruits, and beverages.

Finally, the empty food compartment, with shelves and evaporator, is disclosed. Opposite side of the in-the-door folder tells a brief story of the Santo's value in saving money for the German housewife by quantity buying and keeping foods from spoiling, and stresses the even interior cabinet temperatures which the refrigerator will maintain.

Cold control, easy cleaning, ample ice cubes, and other convenience features are shown photographically on the back cover of the folder.

"Unexpected guests are always arriving" is the theme of a single sheet handout or envelope stuffer, which shows a hostess welcoming visitors who evidently arrived without warning.

Copy stresses the value of a Santo refrigerator in such emergencies, especially in the summer months, when cooling beverages are most welcome and hardest to obtain. With a Santo-Junior, the moral is, the housewife can add to her guests' pleasure in the spirit of true German forethought and hospitality.

* * *

Siemens-Schuckert

Another leading firm among German manufacturers of household refrigerators is Siemens-Schuckert, which fabricates an off-peak absorption unit.

Sold through dealers, electric power companies, and its own retail branches (the "Protos" stores—a retailing corporation affiliated with Siemens-Schuckertwerke A.G.) the Siemens-Schuckert "Protos" refrigerators are manufactured in the following sizes: 2.1, 2.8, 4.25, 7.1 and 10.6 cu. ft.

They utilize a dry air-absorption method (Normelli Patent), in contrast to the compressor system mainly used in America. The alternating evaporating and reliquidizing of the cooling medium is released through current

heat rather than through motor-driven power.

A short period of time occupied by taking in power (fluidizing the cooling medium) is always followed by a period of cold-generation (evaporating of the cooling medium) which lasts approximately six hours.

A cold-storage space joined with the evaporator stores a large amount of this cold air during that period, and then release it to the cooling space again, thus serves to keep equalized low temperatures in the food-storage space.

As the "Siemens-Dry-Absorber" takes up ⅔ of its electric power during the night, a very low night current rate offered by most electric power companies in Germany is therefore made available.

* * *

Kleinkaltemaschinen

German words are notorious jaw-breakers. The term for small refrigerating machines is "kleinkaltemaschinen." Think of the difficulty a salesman must encounter trying to sell something with a name like that.

In addition, the climate is colder than it is in the United States, and average incomes much lower. Saturation of the household market, you are not surprised to find, is no more than one to every 1,000 inhabitants.

According to Herr Braun-Angott, an engineering statistician whose reliability is vouched for by Siemens-Schuckert, 30,598 machines were manufactured and sold in 1935 in Germany. This number was reached after totaling the figures furnished by the following firms, and adding 2,000 more units as an estimate for the sales of other German firms:

General Electric Co. (AEG), Berlin; Bitter-Polar Co., Kassel; Brown, Boveri & Co., Mannheim; German Refr. & Power Machine Co., Scharfenstein; Electrolux Corp., Berlin; First Asberger Ice-Box Factory (Carl Fink), Asberg; Siemens, Schuckert Corp., Berlin; Lumaphon Corp., Nuernberg; Lindes Ice Machine Co., Mainz-Kostheim.

The firms mentioned above sold a total of 2,558 machines for export. Based on these figures, it is estimated that the total export sales would reach 2,700, or about .09 of the entire production.

The number of refrigerators imported is not revealed by commercial statistics available. But inasmuch as the United States unquestionably sends practically all of these the number of American importations only were given consideration. These were only 117 during 1935, against 1,560 in 1934. Refrigeration parts imported from the U.S.A. during 1935 had an approximate value of 12 times that of the complete boxes sent over.

Final grouping of the figures on the sale of mechanical refrigerators in Germany in 1935, would therefore be as follows:

Total sales by German firms	30,598
Number imported	117
	30,715
Number exported	2,700
Number sold in Germany	**28,015**

Against the preceding year's total sales of approximately 10,000 (units) there was an increase of almost 300% in German refrigeration sales in 1935.

These figures by far outdistance the sales of electric ranges.

There exists considerable dissension as to production cost figures on German mechanical refrigerators.

About the only agreed-upon figure in this connection is that dies and tools for a single model may reach the sum of 15,000 to 20,000 German marks.

Herr Brown-Angott offers the following table comparing the manufacturers—and their products—during the seasons 1931-32 and 1934-35.

	1934-35	1931-32
1. Firms manufacturing small refrigeration machines	46	43
2. Number of machine constructions	73	55
3. Machines without piston rods	8	5
4. So-called aggregate for household and industry, constructed upon block-like frame	37	28
5. Industrial compressors of greater effect and stronger construction	24	18
6. Absorption machines (only for household chests)	4	4
7. Compressors with rotary pistons	7	7
8. Compressors with oscillating pistons	62	44
9. Number of machine constructions working with ammonia	26	21
10. Number of machine constructions working with methyl-chloride	19	16
11. Number of machines constructions working with sulphur dioxide	23	14
12. Number of machines working with Freon (F12)	1	1
13. Number of machines working with ethyl-chloride	3	2
14. Number of machine constructions working with dimethylether	1	1

Leading Makes

From various authorities we received information on leading makes of small German refrigerating machines, and their characteristics, all of which can be compiled and presented as follows:

1. Edward Ahlhorn, Joint Stock Co.; trade mark: Ahlhorn.

Stationary capsule compressor, simple working, oscillating pistons, wedge belt impulse, plastic metal piston rod packing, rolling bearing, water-cooled condenser, inundated bundle pipe evaporator with floating valve on the high compression side. Refrigerant: ammonia.

2. Universal Electrical Co., Berlin; trade mark: "Santo."

Santo Limited Liability Co. Henningsdorf; Osthavelland. Rotary piston compressor with air-cooled condenser; refrigerant: sulphur dioxide. To one suspendable block are built damper, condenser, compressor, motor, and regulator.

Belt impulse of the compressor, sliding ring piston rod, motor power ⅛ hp., current expenditure 0.2 kilowatts per hour, direct evaporation, inundated damper (evaporator) with floating regulator, cabinet model with 125-200 liter refrigerating chamber.

"Santo Junior" was marketed first in 1933; 2 sizes 130 and 205 L capacity; may be had for A.C. or D.C. and may easily be changed over. Both sizes are the same in detail and use the same cooling plant but in the 205 L a larger evaporator. The cabinets consist of two steel compartments between which lies a well-proportioned heat-resisting layer. The inner cabinet is of white enamel and the outside is lacquered. The door is self-opening by pressure on a lock which has no handle—even by knee pressure. The large cooling space of size 205 L makes it equally suitable for small business concerns as well as large households.

The cooling system works on the compression method. All cold-producing parts are assembled above the food compartment. It is only necessary to set the machinery into the cabinet. Motor and compressor are mounted on springs on the frame and run noiselessly and without vibration. The evaporator is smooth and may be easily reached. Temperature control and semi-automatic defrostation as well as a thermic motor guard are part of the regulating system.

* * *

Bayer

3. Bayer Bros., Machine Factory, Augsburg. Trade mark: "Bayer."

a. Methyl-chloride Machines.

Stationary, simple working compressor, oscillation sliding ring piston rod, ballbearing. Water and air-cooled condensers, dry evaporator with expanding valve.

Regulation of temperature by thermostat or pressurestat. Refrigeration chamber 160-300 liter available space, milk cooling, night current arrangement.

b. Ammonia Machines.

Stationary, simple working compressor, oscillating pistons, belt impulse, sliding ring piston rod. Water cooled condenser. Dry and overflow evaporator, expansion valve, floater regulator, overflow.

c. "Polaris" Refrigerator.

Periodically working absorption refrigeration apparatus with semi-automatic manner of operation, insertion of circuit by hand, cutting off of heating and regulation of cool water spontaneous.

Night current appropriation. Fuel: electricity or gas. Refrigerant: Ammonia. Absorbent: water. Heating period: 1½—2 hrs., refrigeration lasts about 1 day. Water-cooled condenser.

Refrigerators with ice production for household and business. Finished article: without or outside sheet steel, lacquered white; with zinced metal or outside sheet steel, enameled white.

Bergedorfer Einswerk

4. Bergedorfer Eisenwerk A.G. Aktiengesellschaft (Joint Stock Co.). Astra-works, Bergedorf, Hamburg. Trademark: Astra

1. Type MT Methyl-chloride.

Block arrangement, standing, simple-working two cylinder compressors, oscillating pistons, wedge belt impulse, sliding ring piston rod. Air-cooled lamina condenser, lamina-evaporator with thermostat. Regulator, temperature regulation by thermostat.

2. Type ARE (Ammonia).

Block and divided arrangement, stationary, simple-working one and two-cylinder compressor, oscillating pistons, ball bearing, wedge belt impulse, water cooled bundle pipe condenser, ribbed pipe evaporator with thermostat.

Regulator valve and dry evaporator, bundle pipe evaporator for brine with floating regulator and inundation, temperature regulation by a thermostat.

3. Commercial box (MT-aggregate).

Net contents from 0.71—3.30 cu. meters.

4. Type ET (Ethyl-chloride) for cooling of milk.

Block arrangement with milk cooler, rotary-piston compressor, flat or wedged belt impulse (drive), water-cooled bundle pipe condenser for greater performance, built-in irrigation condenser for smaller performances.

* * *

Bitter-Polar

5. Bitter-Polar-GMBH Limited Liability Co.-Kassel.

Trademark: Bitter-Polar.

Hermetically sealed compressor-motor-aggregate, oscillating pistons, compressor and rotary current motor directly connected, air-cooled condenser, overflow evaporator (damper) with floating regulator, direct evaporation, refrigerant: sulphur dioxide; with continuous current a transformer is necessary.

Size of cabinet (netto):

60 100 150 300 Liter

Expenditure of current

0.75, 1.00, 1.50, 3.0-3.5 kwh. per day.

All cabinets are equipped with sectional cooling, so that several varied temperatures may be maintained at one time and all foods may be cooled according to particular use at the same time. This sectional cooling is arrived at by special building of the layers of shelves. As a specialty this company features the Bitter-Polar-Coolstove, an appliance that combines cooking and refrigeration. Besides the three or four plate burner and the refrigerator, this appliance also contains an oven for baking. Refrigerator and stove are separated by special insulation and air flow.

Borsig

6. A. Borsig, Machine Making. Joint Stock Co. Berlin-Tegel.

Trademark: "Borsig."

Stationary, simple working capsuled two-cylinder compressor, oscillating pistons, roller bearing, sliding ring piston rod, condenser water-cooled or air-cooled, lying and standing bundle pipe damper, steep-pipe evaporator, direct evaporation, smooth or ribbed pipes with fluid refiner.

Hand regulation or automatic by floating regulator in the evaporator or condenser, or by an expansion valve, regulated by compression-pipe temperature. Refrigerant: ammonia, sulphur dioxide, or methyl chloride.

* * *

Bosch

7. Robert Bosch, Joint Stock Co., Stuttgart. Trademark: Bosch.

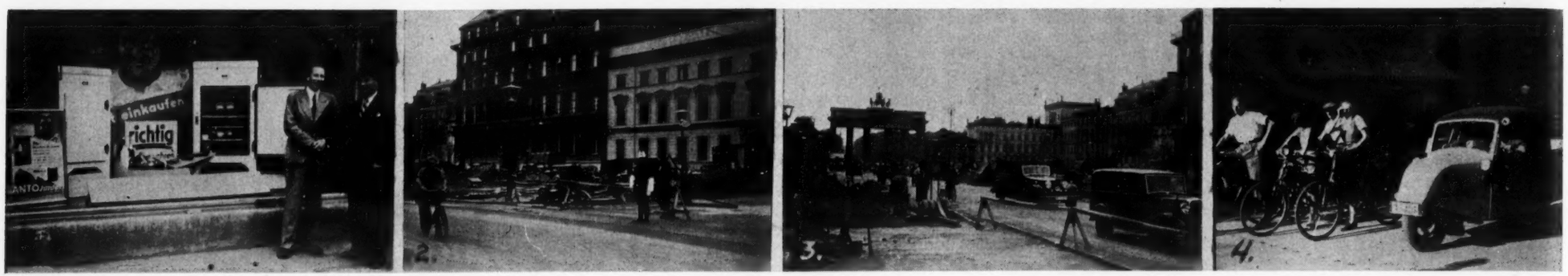
Refrigerator, 60 liter capacity, cylindrical construction with compression-cool aggregate, rotation compressor, directly joined with short circuit motor of 1/10-hp. and 1450 n/min. Cold production 75 kilogram calories an hour, hermetically sealed.

Refrigerant: sulphur dioxide. Ribbed pipe condenser for air cooling is situated on the back side of the box. The cylindrical refrigerating chamber door is formed as a brine evaporator. Refrigerant regulation by a capillary pipe.

The entire system is stored in the upper section and may be readily mounted or demounted. This construction makes it possible to exchange the condensing unit at very low cost should the need arise.

The automatic temperature control is equipped with a defroster which may be conveniently turned on for this purpose. The relative quiet of the Bosch machines must be mentioned. The vibrations are retarded through a complete mounting on rubber. The cabinet top is covered with linoleum and may be used as a may be had with locks.

Progress of Berlin's Modernization Program Removes Linden Trees from 'Unter der Linden'



(1) Fat-cheeked Freda, the Santo (G-E refrigerator) girl, is the best-known figure in German appliance advertising. (2 & 3) Widening of "Unter der Linden," Berlin's most famous thoroughfare, necessitated the removal of its famous trees. (4) Gasoline being expensive, the Germans use plenty of bicycles and motorbikes, as well as motorcycle-trucks, like the one above.

table top. The outside is lacquered in colors, the inside white enamel, and the shelves are of bakelite to withstand corrosion. The cabinets

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German Refrigerating & Power Machine (DKW)

8. German Refrigerating and Power Machine, Limited Liability Co.

Scharfenstein, Zschopautal. Trademark: DKW.

Rotary piston compressor, direct or wedge belt drive, sliding-ring piston rod; one or two compressors with condenser, motor, and sliding shutter on one frame.

Water and air-cooled condenser, damper with floating regulator and damper with pressurestatic or thermo- and pressure-statically regulated expansion valve, temperature regulation by pressurestat or thermostat, direct evaporation and brine cooling.

Refrigerant: sulphur dioxide; household and business refrigerators of 0.12—4.0-cu. meters, milk cooler from 100—200 liter an hour.

D.K.W.-Sharfenstein has brought out two new household boxes of 90 and 120 content. They differ from those built until now, because they are of all-metal construction. The lining is seamless steel, with rounded corners. The shelves rest on indentations in the lining. Ice cube compartments may also be used for making frozen desserts, etc. The 120 L size is equipped with foot-lock so that both hands may be used for carrying. The 180 and 360 L sizes have odor-proof walls so that various foods are not contaminated and may be stored separately. Worthy of mention is the special model which includes a small special ice cream maker of ½ pint capacity in addition to ice cube compartments.

Electrolux

9. Electrolux, Joint Stock Co., Berlin-Tempelhof. Trademark: Electrolux.

Continuously working, hermetically sealed absorption refrigerator, without pump and regulating valve. Refrigerant: ammonia; absorbent: water. Auxiliary gas: hydrogen. Cold production: 21 kilogram calories an hour; sphere of effect up to +35° C. external temperature. Air-cooled condenser.

Temperature regulation by continual heating with electric current, gas, or petroleum, heating intensity capable of regulation in dependence upon external temperature. Daily fuel expenditure at +20/+25° C. external temperature: 2.3 kwh. current; 0.8-cu. meters of gas; 0.5 liters of petroleum.

With gas heating the refrigerator is equipped with safety device against gas deficiency and an instantaneous pilot light with pressure button.

From the spring of 1936: new type of cabinet for household, sheet steel, outside Durolacquer, within, porcelain enamel; 43.5 liters capacity; ice production 0.35 kilograms per day.

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Eisfink

10. The First Asperg Ice Factory. Trademark: "Eisfink."

Stationary, simple-working piston compressor, one and two cylinder, sliding piston ring rod, wedge belt drive, water-cooled cylinder head in water-cooled machines, air and water-cooled condenser.

Direct evaporation with automatic or thermostatic expansion valve, inundated damper with floating regulator. Refrigerant: methyl chloride. Refrigerators and commercial cooling systems.

Eisenfink refrigerators are slow runners. All pipes and refrigerating parts are made of copper. The household models run from 90 to 400 L content, above these any desired sizes and styles are built for commercial purposes.

Case and lining are made of Armco steel. The outside is lacquered with nitro-white enamel and the seamless lining is porcelain lined. The insulation is composed of impregnated and expanded cork plates. The fittings are chrome plated.

The 265 and 415 L cabinets may be equipped with special inner lining upon an additional payment of 20 marks.

• • •

Autofrost

11. A. Freundlich, Machine Factory, Dusseldorf. Trademark: Autofrost.

Stationary, simple working compressor, one and two cylinder, oscillating pistons with short-circuit motor on the cylinder; the motor driven by transformer with low tension.

Gas density covering of compressor and impulse motor. Compressor with motor, water-cooled condenser, collector of humidity and throttle are mounted on one ground plate. Evaporator for direct air or for brine cooling. Refrigerant: ammonia.

• • •

Fehrenbach

12. Fehrenbach Machine Factory, Limited Liability Co., Vilsburg bei Landshut, Bayern. Trademark: Fehrenbach.

Stationary, simple working compressor, oscillating pistons, one cylinder, only one type with 1000 kilogram calories an hour to=-10° C.; wedge belt impulse, refrigerant: sulphur dioxide.

Air and water-cooled condensers, dry evaporator with expansion valve, temperature regulation by thermostat. By limitation of the product to a machine of one size the lowest cost of production is possible in the production of the series.

Trademark: "R"

Stationary, simple working compressor, one and two cylinder, oscillating pistons, belt impulse, direct or driving coupling, sliding piston ring rod, roller bearing, bundle pipe condenser.

Dry or inundated damper with floating regulation or expansion valve, direct evaporation or brine cooling; refrigerant: ammonia. Ice boxes for industry or commercial purposes.

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Frigidaire

13. Frigidaire, Limited Liability, Berlin, NW 87. Trademark: Frigidaire.

Block arrangement, stationary, simple working compressors, two and four cylinder, oscillating pistons, roller bearing, wedge belt impulse, sliding piston ring rod.

Air and water-cooled condensers, damper inundated and dry with expansion valve, automatically or thermostatically regulated, direct evaporation and brine cooling. Refrigerant: sulphur dioxide and dichlorodifluoromethane (Freon-12).

Commercial refrigerators of 0.78—2.70-cu. meters capacity, household refrigerators of 0.122—0.455-cu. meters capacity. Refrigeration for all business; milk cooling systems of 100—1,000 liter an hour with direct evaporation and brine cooling. Air-conditioning systems, transport cooling systems for train and truck.

Amberger Kuhlanlage

14. Gerhardt and Schubert, Machine Factory, Amberg (Oberpfalz).

Trademark: Amberger Kuhlanlage (Amberg Cooling System).

Stationary, simple working capsule compressor, oscillating pistons, belt drive, sliding piston ring rod.

Condenser air and water-cooled; dry evaporation with expansion valve, direct evaporation or brine cooling; refrigerant: methyl chloride. Refrigerators for the household from 0.14-cu. meters—0.31-cu. meters; for business 1.5; 2.5 and 3.25-cu. meters; milk cooling systems 50—300 liter an hour; beer cooling.

• • •

Gerlach

15. Eisenwerk Gerlach, Limited Liability Co., Nordhause a. Harz.

Trademark: Gerlach.

Stationary one to four-cylinder compressor, capsuled, simple working, with oscillating pistons, wedge belt drive with belt span mechanism, sliding piston ring rod.

Water and air-cooled condenser, damper with expansion valve, direct evaporation or brine cooling; refrigerant: sulphur dioxide. Refrigerators from 0.30—3.0-cu. meters, beer bars, and display cases.

• • •

Germania

16. Germania Machine Factory; formerly J. S. Schwalbe and Son, Chemnitz.

Trademark: Germania.

Stationary, simple working compressor, oscillating pistons, one to three cylinder, wedge belt drive, sliding piston ring rod, sulphuric acid cooling automaton with water and air cooling.

Ammonia-cooling automatic machine with bundle pipe condensers, overflow damper with float, dry damper with expansion valve, direct evaporation or brine cooling; milk-cooling aggregate.

* * *

Eiskuli and Stolzenberg

17. Getriebebau, Limited Liability Co., Berlin-Reinickendorf-Westphalen.

1. Trademark: Eiskuli.

Stationary, simple working compressor, one to three cylinder, oscillating pistons, motor gas-tight sealed or capsuled and directly joined; crank case and motor case separated. Aggregate gas-tight against atmosphere. Refrigerant: sulphur dioxide.

Condenser with water cooling and air cooling. Automatic oiling. Regulation of temperature by thermostat. Aggregate E 600 with water cooling for direct room cooling. All other aggregates for brine cooling improved. Milk cooling aggregate for 100—600 liters an hour.

2. Trademark: Stolzenberg

Stationary, simple working capsule compressor, oscillating pistons, wedge belt drive, sliding piston ring rod. Water-cooled condenser; direct evaporation and brine cooling. Refrigerant: ammonia.

* * *

Gutmann

18. Alfred Gutmann, Joint Stock Co., Altona-Hamburg.

Stationary, simple working capsule compressor, oscillating pistons, sliding piston ring rod, wedge drive. Refrigerant: methyl-chloride. Water and air-cooled condenser, dry damper with expansion valve, overflow damper with float regulation.

* * *

Karl Hagen

19. Karl Hagen, Kuhlautomatenfabrik, Berlin.

One to four-cylinder compressors, stationary simple working, capsuled, oscillating pistons, wedge belt drive, sliding piston ring rod, water and air-cooled condenser.

Inundated or dry damper with float regulator or expansion valve, direct evaporation or brine cooling; refrigerant: methyl-chloride. Room, cabinet, and milk cooling.

* * *

Haubold

20. C. G. Haubold, Joint Stock Co., Chemnitz. Trademark: Haubold.

Construction hermetically sealed, without piston rod, high and low pressure sides are provided for in one globe; compressor with V-shaped arranged cylinders placed in the condenser globe; oscillating pistons.

Impulse from wedge or flat belts. Water or air-cooled condensers. Inundated evaporator with float regulator for direct evaporation or brine-cooling. constructions for milk-cooling.

Refrigerant: Sulphur dioxide. Special and deep-freezing systems.

Stationary, simple-working one and more cylinder capsule compressors, oscillating pistons, wedge belt drive, sliding piston ring rod. Water or air-cooled condenser. Lamina evaporator for room cooling. Pipe evaporator for brine cooling.

Dry evaporator with thermostatic expansion valve, overflow evaporator with floating valve, direct evaporation or brine cooling. Refrigerant: sulphur dioxide. Refrigerators from 110—230 liters capacity, commercial refrigerators, and milk spray coolers.

Ammonia compressors:

Stationary, simple working one-cylinder compressors, oscillating pistons, impulse with wedge, or flat belt or coupling; sliding piston ring rod or graphite packing. Water or air-cooled condenser. Dry and inundated evaporator, regulation in dependence upon condenser and evaporator pressure. Direct evaporation or brine cooling. Common bed plate for compressor, motor, and condenser up to horse powers of 6000 kilogram calories an hour.

* * *

Alfred Teeves

Established in 1906, the Alfred Teves Maschinen-und-Armaturenfabrik G.m.b.H. manufacturing firm began its career with the production of fittings for various industrial purposes.

Automobile parts were next manufactured by this firm. In a few years it became one of the leading piston ring factories in Europe.

Broadening its industrial scope, the company started to manufacture electric refrigeration units for domestic, commercial, and industrial use in 1927, and introduced the "ATE" units.

Air-conditioning equipment, later added to the company's line, found a good market—especially in the chemical industry, according to Dr. Alfred Teves, owner of the firm.

Dr. Teves, who heads and directs the firm, has assisting him his son Heinz Teves, manager of the Berlin plant, which was established in 1935. Another son, Ernest Teves, a recent graduate of Harvard College, is now affiliated with the company.

Personnel of the Frankfort and Berlin Teves plants, comprising workmen, technical, and commercial engineers, numbers approximately 2,000. Specialized engineers work under the management of a technical director. The plants are said to be among the most modern and best equipped in Germany.

Dr. Teves comes to America each year to view new developments in the refrigeration manufacturing field, and to confer with business associates in the industry.

In addition to manufacturing all types of refrigeration equipment, the Teves concern is licensor of Lockheed hydraulic brakes in Germany.

In addition to its five models of 100 to 550 L refrigerators, the Alfred Teves Co., Frankfort, has recently added a new cabinet of 140 L capacity. The machinery built in the bottom of the cabinet is suspended by springs, so that is driven without vibration and is practically noiseless.

Even in extreme temperatures the cold control insures complete refrigeration of all foods contained. The ATE units are built so that the machinery as well as the cooling system will give complete satisfaction even in sub-tropical temperatures.

In addition, special tropic cabinets have been developed that will remain at 6° C. inside, even at an outside temperature of 35° C. Great weight is also laid on the ice cube production of the refrigerators. With properly regulated cabinet temperatures their speedy formation will not be difficult.

* * *

Brown Boveri

Brown Boveri and Co. builds cabinets in nine sizes from 90 to 560 L storage content and equipped with gas-tight inclosed BBC automatic coolers. For the year 1936 three new models in the 90-120-150 sizes were developed in which the automatic coolers were completely inclosed in the top and thereby could be used as "built-in" units for kitchens.

* * *

Siemens-Schuckert

The cabinets of the Siemens-Schuckert Co. have been lowered at the top this year to hold the compressor. The color, to correspond with present demands for kitchen furniture, is cream enamel. The inner shelves are in contrast black enamel.

In the smaller models the evaporator is rounded off and inclosed with enameled steel, thereby giving storage space for bottles next to it. A novelty is the offering of a built-in meter if wanted. There has also been an improvement in the temperature regulation for extremely hot days.

The number of models has also been increased by a double-door 300 L content cabinet for country use. Now models of 60, 80, 120 and 300 L content are available.

. . . AUSTRIA

Refrigeration & Air Conditioning

Unlike so many European nations, Austria did not prohibit or limit the importation of refrigeration equipment from the United States. But heavy duties were slapped on, which made retail prices high. A 4-cu. ft. box sold for more than $200.

Now that Austria is a part of the German Reich (it was independent at the time of the author's visit) German makes such as Bosch, AEG, and Protos have the field almost to themselves. A few local manufacturers are in the field, notably Gellert.

Presenting Mine Hosts

When I stepped off the train in Vienna, two prominent and hospitable members of the city's refrigeration fraternity, A. VIKTOR WARCHALOWSKI and HANS FINSTERLE, former business partners and now friendly competitors (they sell Frigidaire and Crosley, respectively) were on the station platform to meet me.

Under their friendly guidance, I went on a tour of Vienna's many historical and beautiful spots. They spent much valuable time in seeing that I had a glimpse of everything in the city that was worthwhile.

Later we were met by ALFRED REICHSFELD of the Frigomat organization in Vienna, and the four of us had a most enjoyable luncheon together.

My stay in Vienna was all too short, and the regret I felt on having to leave the city so soon is largely attributable to the courtesy and kindness shown me by these three men.

* * *

Warchalowski Claims Majority of Sales

Warchalowski, Reckzugel & Co. is Frigidaire distributor in Vienna—has been, since 1926—and is credited with selling fully 50% of the Austrian total annually. Sales by the company up to this summer were about 4,000 units, more than the rest of the companies in the country combined.

The company is also distributor for Toledo Scales, and at the time I was there was the only firm in the country handling Freon.

Severe import restrictions held the company's business up considerably from August, 1931, throughout 1932, according to VIKTOR WARCHALOWSKI, head of the firm handling sales, but things began to pick up along in 1934 and have been going right along ever since.

Distribution is handled by the company through its own branch offices, including service organizations, in four cities. There are only two independent dealers on its list.

Preponderant part of Warchalowski's business is done in the commercial field—the average in this end running well toward 60% of the total volume. Most of the business, both domestic and commercial, is on a time payment basis. About 80% of domestic sales are handled in this fashion; about 65% of the company's commercial business is done on time.

Most of the commercial business done by the company is in the butcher business and among food-serving establishments. Display case business is just now getting started in Austria, Mr. Warchalowski said, and from current indications the field will be a profitable one. All cases are made locally in the many Viennese carpenter shops.

There is little call for a great deal of mechanical equipment for use in air conditioning. Tap water with a temperature of 50° F. is obtainable, and most of the air conditioning being done in the city uses water as the cooling medium.

The Warchalowski company buys from Frigidaire complete any equipment under ⅓ hp. In larger sizes, the company buys from Frigidaire the compressor block, switches, water valves, and some condensers. At one time, Mr. Warchalowski told us, the company manufactured all its understructures, but now it makes only the heavier frames, buying the lighter ones from Frigidaire.

Showrooms for American Refrigeration Products in Vienna

(1) Modernistic showroom of Hans Finsterle, Crosley distributor in Vienna. (2) Mr. Finsterle himself, with A. Warchalowski, Austrian Frigidaire distributor. (3) A Viennese woman stops to look at the Shelvador display. (4) His Master's Voice showroom in Vienna. Norge refrigerators are sold under that inappropriate trade name in Austria by the HMV branch in Vienna.

Duties on refrigeration equipment brought into Austria up the selling costs so that retail prices are pretty stiff, Mr. Warchalowski said.

The duty on compressors is 45 gold krone (1.8 shillings) for each 200 lbs.; on coils, from 80 to 125 gold krone for every 200 lbs.; on household cabinets, 75 gold krone per 200 lbs.

Special rates apply to motors, insulation, rubber gaskets, and ice cube trays.

Average duty is about 25% on the value of the equipment. In addition, an import tax of from 11 to 14% is levied on the value of the invoice upon receipt of shipment.

A 4-cu. ft. refrigerator, the most popular size in the country today, will have to retail for about 1,360 shillings, or approximately $210, Mr. Warchalowski told us.

Most of his competition in the Vienna market, Mr. Warchalowski said, comes from Electrolux, with Crosley a close second. On commercial sales, however, Frigidaire has the upper hand.

Municipal Utilities Promote Sales

Sales of electric refrigerators are financed in Vienna by the city-owned Vienna Power Co., which will put the refrigerator on the customer's monthly power bill, besides permitting special rates for power used in running electric refrigerators.

On a 3-cu. ft. box, for example, the customer pays only 7 shillings a month during the six warm months of the year; on a 4-cu. ft. unit, the rate is about 9 shillings a month. In the six winter months, however, the rate is sliced to about half of the summer terms.

About 80% of the Electrolux units sold are merchandised for the gas they will consume, in Mr. Warchalowski's opinion. Sales are handled through the Vienna Gas Co., another city-owned organization. Rates on a unit of 1-cu. ft. capacity are about 9 shillings a month.

Most of the sales of electric refrigerators in Vienna are made right in the showroom—and by the manager, if possible. Vienna people like to come to the head office, Mr. Warchalowski said. They feel they can buy there cheaper.

The company has a number of salesmen working in the field, ferreting out prospects, but seldom bringing them in. Salesmen are paid a small salary (about 150 shillings) and commission. According to law, if you want a man to do something for you, you have to engage him. So the commission alone plan won't work in Austria, Mr. Warchalowski claims. Unless you pay the man a salary, you have absolutely no control over his actions. He can report for work when he wishes, and leave any time.

Refrigeration saturation is low in the country, and ice companies, of which there are several large ones in the country, are well organized and quite active. Both wet and dry ice is used extensively—the former selling for 70 groschen per 50 lbs., and the latter at the same price for 2 lbs.

Mr. Warchalowski has made a real study of the possibilities of direct mail advertising as a business aid; and he can't see that it's very effective, in his case. He sends out mailings of 5,000 cards, with a return card for prospects to use in answering. Returns average about 25 cards per mailing, and Mr. Warchalowski hasn't been able to trace a single sale to any of the campaigns.

Most of his business is done with the aid of "spotter" dealers. Two scales of commissions are used: 25%, if the dealer makes the sale himself, and 10%, if the dealer turns in the name of a prospect who buys later.

Everybody wants a discount, the Frigidaire distributor complains.

Often these discounts will run as high as 30%—which makes the company rather hard put to show a profit, unless the price of the equipment is jacked up to meet anticipated cuts.

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Finsterle Started the Show

Crosley distributor in Vienna is HANS FINSTERLE, generally credited with being the man who really got refrigeration going in Austria.

Mr. Finsterle's start in the refrigeration field was made with Frigidaire in 1926. He switched to the Crosley line in 1933, and has been handling it ever since. He was also once Buick distributor in this area.

The company operates a neat showroom in the center of Vienna. Under his direction are three dealerships and a single salesman. Mr. Finsterle himself is a crack salesman, and closes much of the company's business at first hand.

About 180 units had been sold in the four months preceding the time I called, Mr. Finsterle said—and most of the sales had been for cash. This, of course, includes transactions made by the company through Vienna Power Co., which sells the units on a 20-month time payment basis.

Unit price of American-made refrigerators is high, because of the stiff import duties and taxes. Price of a 3½-cu. ft. unit sold by the company is about 1,100 shillings, or $225 in American money.

Modernistic Skyscraper Marks Change from Gay Vienna of Pre-War Days

(1) Viennese street scene. (2) Balcony of modernistic restaurant on the top floor of Vienna's tallest skyscraper. The author was taken here for lunch by Messrs. Warchalowski, Finsterle, and Alfred Reichsfeld (Frigomat dealer). (3) Mr. Warchalowski (right) checks a set of coils made in his own plant. (4) Typical headquarters for Austrian distributor of American specialties.

Mr. Finsterle's experience with direct mail advertising has been quite different from that of his former associate, Mr. Warchalowski. So successful has it been for him that now he doesn't use anything else. Newspaper advertising has been dropped.

Crosley's policy regarding foreign representatives, at least in Austria, Mr. Finsterle finds considerably different from the terms he obtained when he was associated with Frigidaire.

* * *

Gellert Assembles Units

OSKAR GELLERT, sales representative for Ignatz Gellert & Co., Vienna, told me that the company is preparing a household unit for the home market —more than that, he let me have a look at it. The cabinet is Austrian made, and was chiefly notable in that it was decorated with Monel metal strips.

The company handles Westinghouse equipment, and some German made units. For the most part, the firm buys American products and assembles them into complete units on the other side of the water.

Companies with which the Gellert organization deals with in this country include Universal Cooler, Fedders, Parker Mfg. Co., Penn, and Melchior-Armstrong-Dessau.

* * *

Swedish Electrolux Runs Viennese Branch

Electrolux AG has a stock of gas refrigerators in Eisenplatz 3, Vienna. The firm is operated from Stockholm as a branch office, and the stock is owned by the head company. Managers of the firm are Messrs. PEREN and GOSCHEL.

From Vienna headquarters, the company handles deliveries in Lenz, Graz. Klagenfurt, Innsbruck, and Salzburg.

During the first seven months of 1935, 263 American refrigerators were imported in Vienna. During that time, according to the managers, Electrolux sales were 143 units, which would indicate that the company gets a good share of the total business done.

Recent encouraging development in Electrolux sales has been a program of cooperation with Vienna Gas Co. The utility doesn't sell refrigerators, but does have men out canvassing and digging up prospects who are turned over to the Electrolux organization for follow-up and closing.

Electrolux has few dealerships operating in Austria, my informants said.

* * *

Other Companies In the Field

Maschinenbauanstalt Hermann Mayer, at Laxerburgerstrasse 36, Vienna, handles Frigomat refrigerators and also does a good deal of assembling work on its own equipment. ALFRED REICHSFELD is associated with the commercial sales department of the company.

Kelvinator distributor in the city is L. GUTTMANN, at Schonbrunnerstrasse 77. White, Child & Beney, at X Troststrasse II, manufactures small refrigerating machines and some ventilation equipment.

* * *

Germany Competes

Competition from the German household refrigerator industry is commencing to be felt perceptibly by Vienna distributors for American lines, although U. S. Department of Commerce export figures on household units for Austria through August of 1936 show a greater dollar value than for the whole of 1935.

HANS FINSTERLE, Crosley distributor in Vienna, reflects this belief. Says Mr. Finsterle:

"The German competition is now very perceptible. The distributors of German refrigerators have the goods on open credit, which of course means greater facilities for selling."

Last year the German "Protos" and "Bosch" lines were placed on the Austrian market, the latter with cylindrical space for food storage. Quite recently two other German makes were introduced in Vienna. Presence of these German lines in competition with American makes causes many distributors of the latter to feel a bit uneasy about the future of their market.

"The turnover is not large, but corresponds to the economic condition in Austria," Mr. Finsterle goes on. Buying power is at low ebb due to the severe economic depression of the past several years. The market for American-built washing machines also has been hard hit; very few Austrian families have the means to afford the costs of operating them or other household appliances such as electric refrigerators.

"Notwithstanding," says Mr. Finsterle, "I am sure that my turnover of Crosley refrigerators in 1937 will be at least equal to that in 1936."

From the first of the year to Nov. 1, Mr. Finsterle's distributorship on the Rathausplatz had sold 58 Crosleys, divided as follows: 3 cu. ft.—15; 3.5 cu. ft.—19; 5 cu. ft.—16; 6 cu. ft.—5; 7 cu. ft.—3.

Import restrictions seem to have created the same problem for Austrian distributors that they have in so many other foreign countries where government sponsorship of home companies has erected large tariff barriers, besides placing dead weights in the form of import "permissions" to cause costly hold-ups in getting boxes on sales floors.

Mr. Finsterle declared that he had an import permission for 100 Crosleys in 1936 and expected to be granted government approval to bring in the same quantity in 1937.

"Only the dealers who were established in the beginning of electric refrigeration in Austria receive any import contingent at all," Mr. Finsterle states.

The Allgemeine Elektricitats-Gesellschaft (there's a twister), of which Mr. FLOHR is director, is a German firm operating in Vienna at Wien VI, Gumpendorferstrasse 6. The company operates a branch factory for motors in Vienna, too.

The company sells Santo (a German refrigerator), Hotpoint equipment, and a few Monitor Tops.

NEWS export figures for 1935 show that 345 household models with a dollar value of $24,849 went from this country to Austria. In 1936, export statistics from January through August set the dollar value of Austrian imports from the United States at $26,791—almost $2,000 above the 1935 total.

American-built commercial units exported to Austria totaled 120 in 1935, valued at $11,893. The figure for the first eight months of 1936, based on this, shows a decrease as only $6,551 worth of commercials up to 1-ton were sent to Austria during that period.

The parts market seems to be taking the upgrade course in Austria that it shows almost uniformly in recent years throughout Europe. In all of 1935 only $14,759 worth of American refrigeration parts were shipped. By Sept. 1 of 1936, the figure stood at $25,751.

As a personal suggestion to American refrigerator manufacturers seeking to meet the specific design demands of the Austrian market, Mr. Finsterle says that he would like to see cabinet tops flat in the smaller model ranges. Those he is selling are curved, he writes. The reason for this is that most Austrian housewives want to use the tops of their refrigerators as a shelf to afford added space in their kitchens.

* * *

Other Appliances

The depression that has prevailed in all lines of business during the past several years has reduced the purchasing power of the Austrian population to such an extent that very few families can now afford to pay the cost of operating an electric washing machine, or similar household appliances, even if they could purchase them, declares Consul General James Barclay Young.

The small demand is set off by cut-price offers, and local distributors are suffering from sharp competition between a number of American, German, and domestic makes.

One difficulty in introducing such machines in Austria is the inspection which they must undergo by the Elektrizitaets Werke der Gemeinde Wien (Vienna Municipal Electric Plant); only with the approval of the electric company can the owner of such machines obtain the necessary electric power. It is, of course, not possible to sell the machines until this approval is granted as the owners might not be allowed to use them.

Air-conditioning systems, even electric fans, are not used extensively in Austria. This country is about the same distance from the North Pole as St. Johns, Newfoundland, and such

relatively hot periods as occur during the summer months never last more than a few days.

Moreover, as most Austrian industries are working at low capacity there is very little money available for the purchase of modern air-conditioning equipment by industrial or commercial prospects.

Nevertheless air conditioning has gained ground also in Austria during recent years, the most important purchasers having been public offices, Federal Railways, tobacco and automobile factories, and the large moving picture theaters. On the other hand, the purchase of room coolers by private individuals is practically unknown. Most of the air-conditioning equipment sold in Austria has been of domestic origin and there are several factories in this country producing such equipment.

In the opinion of several leading distributors of household appliances, there is practically no prospect of developing a market in Austria for American electric and gas ranges, for the reason that the market is glutted with cut-price products of the domestic industry, which is very well developed, and has a number of more or less important factories.

* * *

Austrian Currency

The Austrian monetary unit is the schilling, consisting of 100 groschen, and having a par exchange value of approximately $0.2382. Up to 100 schillings in silver are legal tender, and silver coins of five and two schillings are accepted in unlimited amount by Federal agencies. Gold coins are unlimited as legal tender.

Control of foreign exchange operations, including the movement of bullion and currency, is vested in the Austrian National Bank.

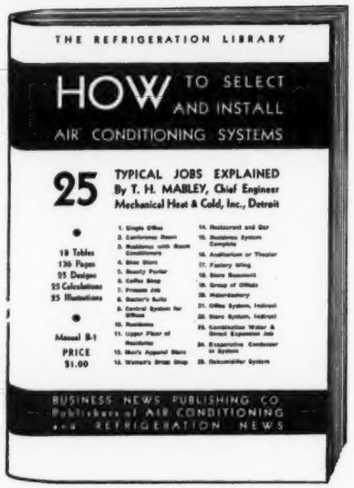
The Bank also has the sole right to issue notes, such paper money being legal tender for all purposes, including customs dues and taxes.

The use of checks is confined largely to drawing on the postal-savings banks.

One gold crown is convertible into 1.83 paper schillings.

Visitors leaving Austria are examined at the border to see that they have less than 200 schillings in their possession.

HOW TO SELECT AND INSTALL AIR CONDITIONING SYSTEMS



Outline of Manual B-1

Manual B-1 contains a series of 25 articles on Air Conditioning, written by Mr. T. H. Mabley, chief engineer, Mechanical Heat & Cold, Inc., Detroit, Mich. These articles are "case histories" of installations engineered by Mr. Mabley in his regular work as chief engineer for a large air-conditioning contractor.

The "cases" start with the simpler installations such as a single office and continue on through to more complicated installations, such as process jobs and the air conditioning of auditoriums and department stores.

Simple methods are given for calculating heat gain and loss for each job, determining design conditions, selecting equipment, and locating and installing equipment. Direct and indirect systems are used in these typical installations and the advantages and disadvantages of each method are given.

While all the known fundamental functions of air conditioning are desirable, there are certain applications and conditions where some of the functions are not considered necessary nor economical to install and operate.

In a process job all of the functions may be utilized as the conditioning equipment is required to maintain predetermined year-around temperature and humidity within close limits.

Conditioning an auditorium where large crowds of people will be present for two or three hour periods has its particular problem while the design limits for a department store with its heavy electric light load require expert attention. All of these and other factors that must be considered are discussed for the individual application.

The procedure followed on these 25 typical jobs may be studied by the contractor, dealer, engineer, etc., who is figuring a job and much valuable information may be gained.

Simple methods for figuring square and round air duct sizes are given and dampers, grilles, etc. for individual applications are discussed. In a beauty parlor, for example, where the occupants are seated in one place for an extended period, the air ducts must be correctly sized, and the discharge grilles carefully selected and located to avoid drafts.

Sizing of suction lines to avoid excessive pressure drops especially where long runs and several elbows are required, is discussed and a simple method for determining the size for any installation is given.

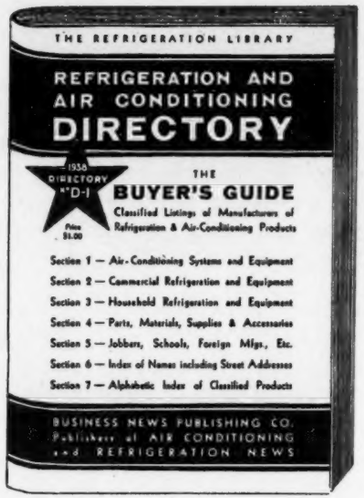
Night clubs, where smoking is excessive and high latent heat loads result from dancing and perspiring of many people, require special attention from the standpoint of proper ventilation and reducing the high relative humidity, without reducing dry-bulb temperature to an uncomfortable degree. One of the "cases" deals with this problem and a typical chemical dehumidification system for controlling high humidity is used.

Briefly, all the known fundamental functions of air conditioning are brought into play in these 25 jobs.

Manual B-1 contains 136 pages and costs $1.00 in the U. S. A.*

***Note** The minimum extra charge for each package of books shipped outside of the United States is 50 cents. Up to six $1.00 books may be shipped in one package.

THE REFRIGERATION & AIR CONDITIONING DIRECTORY


THE REFRIGERATION LIBRARY
REFRIGERATION AND AIR CONDITIONING DIRECTORY
1938 DIRECTORY
THE BUYER'S GUIDE
Classified Listings of Manufacturers of Refrigeration & Air-Conditioning Products
Section 1 — Air-Conditioning Systems and Equipment
Section 2 — Commercial Refrigeration and Equipment
Section 3 — Household Refrigeration and Equipment
Section 4 — Parts, Materials, Supplies & Accessories
Section 5 — Jobbers, Schools, Foreign Mfgs., Etc.
Section 6 — Index of Names including Street Addresses
Section 7 — Alphabetic Index of Classified Products
BUSINESS NEWS PUBLISHING CO.
Publishers of AIR CONDITIONING and REFRIGERATION NEWS

New edition will be off the press in January, 1939. Price $1.00 per copy.

The Refrigeration and Air Conditioning Directory is the Buyer's Guide of the refrigeration and air-conditioning industry.

All manufacturers of complete refrigeration and air-conditioning equipment, parts, materials, and supplies are listed in the Directory. Companies are classified by the types of products manufactured and also are listed alphabetically. Complete addresses are given in the alphabetic section.

The Directory is designed to help the buyers of the industry easily locate sources of supply for complete new equipment and parts, materials, and supplies required for the manufacture of new products as well as replacements for field service.

The Refrigeration & Air Conditioning Directory contains the following major sections of classified products:

Manufacturers of air-conditioning systems and equipment.

Mfrs. of commercial refrigeration systems and equipment

Mfrs. of household refrigeration systems and equipment.

Mfrs. of parts, materials, supplies, and accessories.

Jobbers, schools, and foreign manufacturers.

AROUND THE WORLD WITH A CANDID CAMERA

(ENGLAND & PALESTINE)

No. T-1, heavy paper cover, 80 pages, size 12¾ x 9, price $1.00.

This book by George F. Taubeneck, editor of AIR CONDITIONING & REFRIGERATION NEWS, contains a study of the export markets in England and Palestine as well as a lively presentation of the habits, customs, manner of living, and national character of two nations which are very much in the world's news.

It is authentic, well-rounded, and close-to-the-picture, the result of intimate contacts with intelligent and responsible residents of each country visited. The text is illustrated by more than 140 candid photographs which picture the country, the people, and refrigeration and air-conditioning leaders in these two countries.

***Note** The minimum extra charge for each package of books shipped outside of the United States is 50 cents. Up to six $1.00 books may be shipped in one package.

MASTER SERVICE MANUALS—HOUSEHOLD REFRIGERATION

Outline of Manual No. 1

Manual No. 1—Household Refrigeration—contains basic information on all of the fundamental types of household refrigerators.

Chapter 1 explains briefly the *theory* of refrigeration.

Chapter 2 is devoted to the *principles* of refrigeration.

Chapter 3 covers all of the common refrigerants, their boiling points, chemical characteristics, and other pertinent factors.

Chapter 4 is a complete study of condensing units, both reciprocating and rotary, with all of the several parts described, discussed, and illustrated. Care, adjustment, replacement, and general service and shop procedure on component parts are fully explained.

Chapter 5 covers low side float valves, high side float valves, automatic expansion valves, thermostatic expansion valves, capillary tubes, and evaporators used with these refrigerant control valves. Operating principles, adjustment, repair, and general service instruction and procedure are given.

Chapter 6 is given to the study of automatic controls, both low pressure and thermostatic. Fundamental principles are explained as well as test, adjustment, replacement and service.

Chapter 7 is on electric motors. While electric motors may be considered a separate study in themselves, information pertinent to their use on household refrigerators is given to enable the serviceman to diagnose and make minor repairs in the field.

Summarizing these seven chapters, all of the several major component parts of any household system are dealt with so that a thorough knowledge of the theory, principles, refrigerants, condensing units, evaporators, controls, and motors may be gained.

Manual No. 1 contains 144 pages and costs $1.00 in the U. S. A.*

THE REFRIGERATION LIBRARY
MASTER SERVICE MANUALS
HOUSEHOLD REFRIGERATION
MANUAL NO. 2
Instructions on 20 Distinct Installation Operations
Instructions for Servicing 4 Fundamental Types
of Household Electric Refrigeration Systems
BUSINESS NEWS PUBLISHING CO.
Publishers of AIR CONDITIONING and REFRIGERATION NEWS

Outline of Manual No. 2

Manual No. 2—Household Refrigeration Installation and Service—gives complete data on installation and service on all fundamental types of systems.

Chapter 8 in Manual No. 2 of this Household Series covers the installation procedure of both self-contained and remote installations with many step-by-step installation operations such as cutting, flaring, bending, jointing, and installing copper tubing. It covers the proper uses of flare tube fittings and tools. Instructions for installing evaporators, condensing units, self-contained and remote household equipment are given in step-by-step order.

Chapter 9 of Manual No. 2 takes all of the fundamental types of household systems and classifies them for very convenient use by the serviceman when servicing any make or model of conventional type household refrigerator.

Every conventional system will fall under one of these several classified types, such as low side float valve system (type 1), high side float valve system (type 2), automatic expansion valve system (type 3A), thermostatic expansion valve system (type 3B), and capillary tube system (type 4).

These major types are sub-classified according to the arrangement of service valves and the type of automatic control used.

For each type of complete analysis of service complaints and their probable effect is given. Then for each cause or condition is given a step-by-step set of actual service operations.

Manual No. 2 contains 128 pages and costs $1.00 in the U. S. A.*

***Note** The minimum extra charge for each package of books shipped outside of the United States is 50 cents. Up to six $1.00 books may be shipped in one package.

MASTER SERVICE MANUALS—HOUSEHOLD REFRIGERATION

Outline of Manual No. 3

Manual No. 3 of the Household Series is devoted to detailed information on several special types and "orphan" makes of household refrigerators.

On account of their very special design, etc., the information about these makes does not differ materially from the way it appeared in the original service manuals issued by the manufacturing companies.

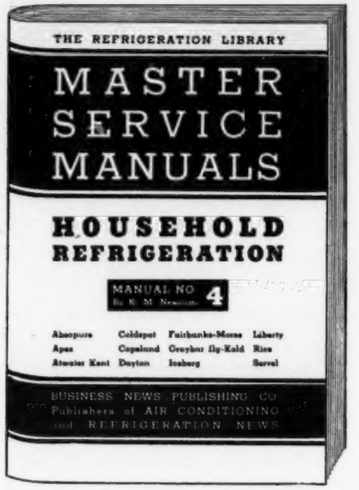
Much of this service information is no longer available from any other source as many of the companies have been out of business for several years or have discontinued manufacturing refrigerators.

The several special types and "orphan" makes covered herein are as follows:

1. Allison
2. ElectrICE
3. Holmes
4. Iroquois
5. Majestic Conventional
6. Majestic Hermetic
7. Socold
8. U. S. Hermetic
9. Welsbach

After reviewing the characteristics of these special types it will be obvious that they do not lend themselves to being classified under "Types of Systems" as given in Manual No. 2, hence much of the terminology originally used has not been changed.

Manual No. 3 contains 144 pages and costs $1.00 in the U. S. A.*



Outline of Manual No. 4

Manual No. 4 of the Household Series gives detailed information on 12 makes of household refrigerators which fall into four general classifications of systems given in Manual No. 2.

Most of the makes discussed are being manufactured and sold at the present time while others are no longer being manufactured or sold but are in use in thousands of homes.

The manual contains many illustrations which are helpful to the service man in servicing the unit discussed.

Manual No. 4 discusses the specific characteristics of each different make and classifies the system so that service complaints and operations can be easily referred to in Manual No. 2.

The different characteristics of each series of yearly models of the make discussed are given in detail so as to simplify the work of the service man.

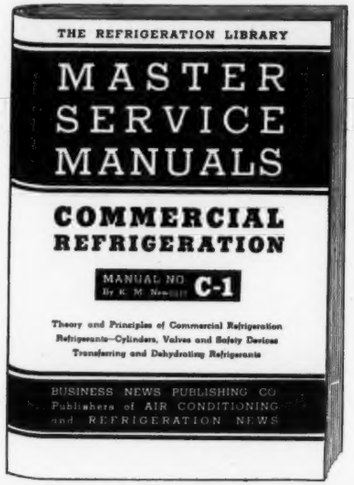
The makes discussed in Manual No. 4 are:

1. Absopure
2. Apex (also Wayne)
3. Atwater Kent
4. Coldspot (Sears—Sunbeam)
5. Copeland
6. Dayton (also Niagara)
7. Fairbanks-Morse
8. Graybar Ilg-Kold
9. Iceberg
10. Liberty
11. Rice
12. Servel Conventional
13. Servel Hermetic

Manual No. 4 contains 136 pages and costs $1.00 in the U. S. A.*

*Note The minimum extra charge for each package of books shipped outside of the United States is 50 cents. Up to six $1.00 books may be shipped in one package.

MASTER SERVICE MANUALS—COMMERCIAL REFRIGERATION


THE REFRIGERATION LIBRARY
MASTER SERVICE MANUALS
COMMERCIAL REFRIGERATION
MANUAL NO C-1
Theory and Principles of Commercial Refrigeration
Refrigerants—Cylinders, Valves and Safety Devices
Transferring and Dehydrating Refrigerants
BUSINESS NEWS PUBLISHING CO
Publishers of AIR CONDITIONING and REFRIGERATION NEWS

Outline of Manual C-1

Presented in the first two chapters of Manual C-1, the first of the commercial refrigeration series, are the theory and principles of *commercial* refrigeration. These fundamentals, which form the ground work for the subsequent chapters of the series, are presented in simple terms so that they may be easily understood by even the non-technical man.

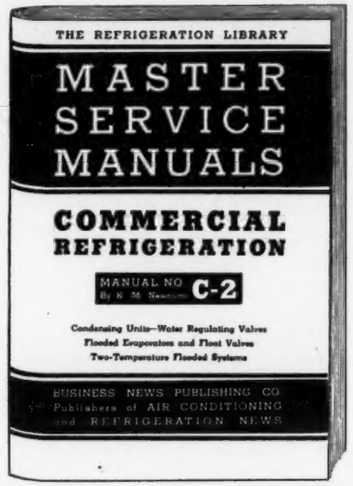
Chapter 3, Properties of Refrigerants, includes such useful information as boiling points, effect on lubricating oils, inflammability and explosive properties, effect on health, how to locate leaks, and approximate operating head pressures of sulphur dioxide, methyl chloride, and Freon-12.

Chapter 4, Refrigerant Cylinders, Valves, and Safety Devices, contains much valuable information on handling, cleaning, I.C.C. regulations, safety devices, and testing and inspection of refrigerant cylinders. Refrigerant cylinders and valve equipment of all the leading refrigerant producers are illustrated and described and the refrigerant capacity specifications of the cylinders are given.

Chapter 5, Transferring Refrigerants, gives the recommended procedure for the transferring of refrigerants from larger to smaller (service) cylinders with a minimum of loss and danger.

Chapter 6, Dehydrating Commercial Refrigerants, deals with the problems involved in the removal of moisture from commercial refrigeration systems. Characteristics of such drying agents as calcium chloride, calcium oxide, activated alumina, and silica gel are given and typical dryers are illustrated.

Manual C-1 contains 96 pages and costs $1.00 in the U. S. A.*



Outline of Manual C-2

Manual No. C-2, the second of the series, is an advancement in the study of commercial refrigeration service and installation methods, and deals with problems of a more specific nature concerning the repair and servicing of the intricate mechanisms of commercial refrigeration equipment.

Chapter 7, Commercial Condensing Units, acquaints the student with the service procedure of the many parts of which a commercial condensing unit is composed, such as: compressor body assemblies, crankshaft and connecting rod assemblies, piston and piston valve assemblies, discharge valve assemblies, stuffing box seals, service valves, air and water-cooled condensers, liquid receivers, and safety devices.

Chapter 8, Water Regulating Valves, is devoted to a thorough study of the pertinent service features of all makes and types of water regulating valves which are used with modern commercial refrigeration equipment.

Chapter 9, Flooded Evaporators and Float Valves, deals extensively with such service information as: cut-in point, cut-out point, effect of shortage of refrigerant, effect of leaky float valve, effect of oil on SO_2, correcting oil-logged evaporators, adjusting flooded system, approximate control settings, installation methods, and sources of leaks.

Chapter 10, Two-Temperature Flooded Systems, explains the problems involved in duplexing flooded coils, balancing of evaporators, undersold installations, two-temperature control methods, constant pressure valves, snap-action two-temperature valves, and check valves.

Manual C-2 contains 112 pages and costs $1.00 in the U. S. A.*

***Note** The minimum extra charge for each package of books shipped outside of the United States is 50 cents. Up to six $1.00 books may be shipped in one package.

COMMERCIAL REFRIGERATION—INDUSTRIAL REFRIGERATION

Outline of Manual C-3

Continuing the advanced study of the equipment and parts which compose commercial refrigeration systems, Manual No. C-3, the third of the series, deals specifically with modern low sides (evaporators), thermostatic expansion valves which control the refrigerant flow to the evaporators, temperature controls, refrigerant control valves, and electric motor equipment used with refrigeration systems.

Chapter 11, Expansion Evaporators, is a study of the more modern types of finned evaporators, including cycle of operation in an expansion system, methods of selecting coils, dry vs. wet expansion, use of headers, bottom vs. top expansion, blower units, heat exchangers, and duplexing various types of evaporators.

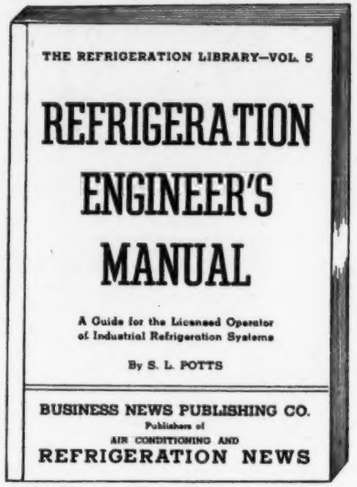
Chapter 12, Thermostatic Expansion Valves, is a broad, yet simplified, study of bellows and diaphragm-type thermostatic expansion valves. How they are used, what they are intended to do, and how they do it.

Chapter 13, Pressure and Temperature Controls, deals extensively with low-pressure and thermostatic controls, their attendant problems when used with commercial refrigeration, and the adjustment procedure for many types.

Chapter 14, Refrigerant Control Valves, contains a complete explanation of the uses and service factors concerning such controls as, snap-action valves, automatic regulating valves, thermostatic regulating valves, maximum crankcase pressure valves, pressure regulating valves, solenoid (magnetic) valves, check valves, pressure relief valves, oil separators.

Chapter 15, Motors, Starters, and Overload Relays, provides a guide for the servicing of electric motors, starters, overload devices.

Manual C-3 contains 144 pages and costs $1.00 in the U. S. A.*


THE REFRIGERATION LIBRARY—VOL. 5
REFRIGERATION ENGINEER'S MANUAL
A Guide for the Licensed Operator of Industrial Refrigeration Systems
By S. L. POTTS
BUSINESS NEWS PUBLISHING CO.
Publishers of
AIR CONDITIONING AND
REFRIGERATION NEWS

Outline of Manual E-1

The Refrigeration Engineer's Manual is written especially for the licensed operator of industrial refrigerating equipment. It is divided into 14 chapters, the contents of which are given below.

Chapter 1. Principles and Methods of Refrigeration — Principles of refrigeration together with methods of accomplishing cooling. Definitions of basic terms.

Chapter 2. Liquid Vapor Process —Effects of pressure on boiling and condensing points of a refrigerant. Need of compressor. Functions of other parts of unit.

Chapter 3. Refrigerants—Characteristics, requisites, and detailed discussion of refrigerants.

Chapter 4. Compressor Classifications and Functions—Classification according to cylinder position, gas discharge, construction, driving mechanism and machine.

Chapter 5. Compressor Parts—Explanation of pistons, valves, cylinders, bearings, rings, manifolds.

Chapter 6. Effect of Temperature and Pressure on Gases.

Chapter 7. Compressor Size Required for Given Capacity—Considerations affecting selection of compressor to produce required amount of refrigeration.

Chapter 8. Condenser Operation and Selection—Functions. Conditions affecting selection.

Chapter 9. Evaporator Coils—Functions of the evaporator. Types of refrigerant controls. Direct and indirect expansion systems.

Chapter 10. Standard Refrigeration Plant Operations — Service operations on compression plant.

Chapter 11. Absorption System of Refrigeration—Principles.

Chapter 12. Indirect Expansion Systems—Principles. Use of brines.

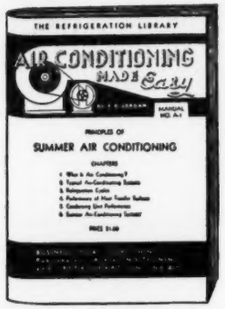
Chapter 13. Manufacture of Artificial Ice—Figuring refrigeration requirements, equipment.

Chapter 14. Spray Ponds and Cooling Towers.

Manual E-1 contains 224 pages and costs $2.00 when ordered separately. You may pay only $1.00 for this book provided your order and remittance amounts to a total of $10 or more.

***Note** The minimum extra charge for each package of books shipped outside of the United States is 50 cents. Up to six $1.00 books may be shipped in one package.

AIR CONDITIONING MANUALS—A COMPLETE COURSE OF STUDY



Outline of Manual A-1

Manual No. A-1 is devoted to the Principles of Summer Air Conditioning.

Chapter 1. What is Air Conditioning?—The author asks the question "what is air conditioning?", discusses many theories and answers the question by defining air conditioning.

Chapter 2. Typical Air Conditioning Systems—Direct expansion and indirect air-conditioning systems, combination installations, washers, and precoolers.

Chapter 3. Refrigeration Cycles—Interrelationship of refrigeration and air conditioning. Direct and indirect expansion mechanical refrigeration cycles, closed absorption, steam vacuum, and open adsorption systems.

Chapter 4. Performance of Heat Transfer Surfaces—Air-conditioning coils of the direct expansion type and indirect water-cooler systems. Laws governing coil performance.

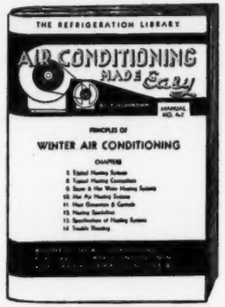
Chapter 5. Condensing Unit Performance—Purpose, importance, and performance of air and water-cooled condensing units as related to summer air-conditioning systems. Performance of compressors.

Chapter 6. Summer Air Conditioning Systems—Component parts are brought together to form complete summer air-conditioning systems.

Manual A-1 contains 112 pages and costs $1.00 in the U. S. A.*

Appendix A. Terms of Definitions.

Appendix B. Properties of Refrigerants.



Outline of Manual A-2

Manual No. A-2, the second of the series, covers the Principles of Winter Air Conditioning.

Chapter 7. Typical Heating Systems—A general description of various types of heating systems.

Chapter 8. Miscellaneous Typical Connections—Types of connections for all types of heating systems.

Chapter 9. Steam and Hot Water Heating Systems—Principles and operation of steam gravity, vapor, vacuum, gravity hot water, forced hot water, and central heating systems.

Chapter 10. Hot Air Heating Systems—Gravity, forced, trunk and split systems, plenum chamber, air mixture regulation.

Chapter 11. Heat Generators and Controls—Four major points of good boiler design are discussed for selection of equipment.

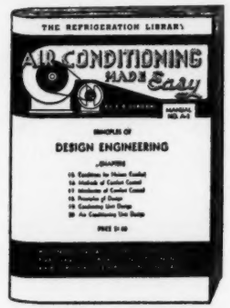
Chapter 12. Heating Specialties—Traps, air valves, pressure-regulating valves, strainers, relief valves, water feeders, radiators, unit heaters.

Chapter 13. Specifications of Heating Systems—Specification outline covering materials used and procedure.

Chapter 14. Trouble Shooting—Causes of trouble and correction.

Appendix C. Properties of Materials.

Manual A-2 contains 104 pages and costs $1.00 in the U. S. A.*



Outline of Manual A-3

Manual No. A-3, Principles of Design Engineering, covers:

Chapter 15. Conditions for Human Comfort—Metabolic processes of the human body. Temperature and humidity conditions to allow normal functioning of these processes. and also provide comfort.

Chapter 16. Methods of Comfort Control—Air bypass, refrigerant bypass, backheat, inherent, and spot inherent methods of control. Comparative cost of control methods.

Chapter 17. Mechanics of Controls—Single and multiple station control systems. Thermostats, humidistats, low-pressure controls, head-pressure controls, high-pressure safety cutouts, expansion valves, and high side floats.

Chapter 18. Principles of Design—Fundamental factors for successful air-conditioning equipment design.

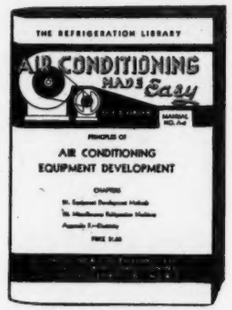
Chapter 19. Condensing Unit Design—Compressor sizes, construction materials, valve designs, shaft seals, air and water-cooled condensers, motors, drives, and starters.

Chapter 20. Air Conditioning Unit Design—Range of capacities to cover entire field. Humidifiers, filters, fans, fan motors and drives.

Appendix D. Instruments.

Appendix E. Mathematics.

Manual A-3 contains 112 pages and costs $1.00 in the U. S. A.*



Outline of Manual A-4

Manual No. A-4, Equipment Development, discusses:

Chapter 21. Equipment Development Methods—Condensing unit performance data, water cooler data, air-conditioning unit performance data, correlating coil data, test of complete air-conditioning unit, heating coil performance data, air and water flow measurement, field capacity tests.

Chapter 22. Miscellaneous Refrigeration Machines—Operating characteristics, advantages and disadvantages, application, and details are given on four large type refrigerating machines: steam jet refrigeration, centrifugal water vapor compressors, non-aqueous refrigerant centrifugal compressors, closed absorption cycle.

Appendix F. Electricity.

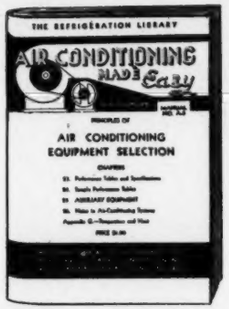
Manual A-4 contains 112 pages and costs $1.00 in the U. S. A.*

This series of eight books (see opposite page) was written by F. O. Jordan who has had a wide experience in air conditioning engineering. Mr. Jordan is technical director of Refrigeration & Air Conditioning Institute, Chicago.

This series of manuals provides a complete course of study covering all phases of air conditioning for contractors, architects, engineers, service men, and students.

***Note** The minimum extra charge for each package of books shipped outside of the United States is 50 cents. Up to six $1.00 books may be shipped in one package.

AIR CONDITIONING MADE EASY



Outline of Manual A-5

Manual No. A-5, Principles of Equipment Selection, the fifth of the series, covers three main subjects.

Chapter 23. Performance Tables and Specifications—Requirements and arrangements of tables. Samples given in Chapter 24. Purpose of specifications; sample specifications on residential-type air-conditioning units and condensing unit.

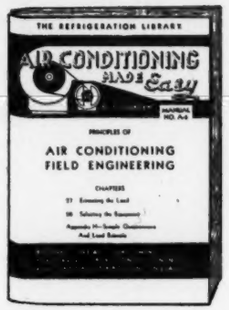
Chapter 24. Sample Performance Tables—Estimation methods. Specimen performance tables—samples of methods presenting equipment performance tables on direct expansion conditioners, year-around residential conditioner, air delivery, heating coil capacity, chilled water conditioner, chilled water room cooler, and condensing unit.

Chapter 25. Auxiliary Air-Conditioning Equipment—Data on electric motors, transformers, switches, starters, compressor motors, drives, starters, air-conditioning fans, liquid pumps, cooling towers and ponds, evaporative condensers, air washers, air drying, independent drying and cooling, adsorption, open absorption.

Chapter 26. Noise in Air-Conditioning Systems. Acceptable Levels and Sources—Facts on noise, acceptable noise, source of noise, natural noise levels, characteristics of sound insulating materials, noise through building structure, open-air-borne sound, duct insulation, grille noises.

Appendix G. Temperature and Heat.

Manual A-5 contains 104 pages and costs $1.00 in the U. S. A.*



Outline of Manual A-6

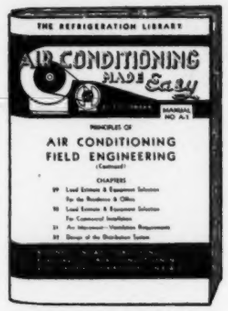
Manual A-6 is the first of two manuals covering the Principles of Field Engineering. The manual gives a detailed explanation of the methods of estimating the load for all types of air-conditioning installations and presents the necessary tables for this work. Data is also presented on the methods of selecting the air conditioners and component equipment for the job.

Chapter 27. Estimating the Load—General discussion of loads and estimates. The following factors are considered in summer cooling load: transmission and sun load, sensible heat of outside air, sensible heat given off by occupants, miscellaneous sensible heat, latent heat of outside air, latent heat of occupants, and miscellaneous latent heat. Sensible and latent winter heating load. Many tables are included to assist in proper equipment selection.

Chapter 28. Selecting the Equipment—Mechanics of selection. Methods of selecting direct expansion summer air-conditioning equipment, condensing unit, indirect system, heating and humidifying equipment, humidity controls.

Appendix H. Sample Questionnaire and Load Estimate—This section shows a sample questionnaire for a restaurant and the methods of estimating the load on the basis of the information secured in the questionnaire.

Manual A-6 contains 96 pages and costs $1.00 in the U. S. A.*



Outline of Manual A-7

Manual A-7 is the second book devoted to the Principles of Field Engineering.

Chapter 29. Load Estimate and Equipment Selection for the Residence and Office—Problems of load estimating and equipment selection are analyzed for the installation of air conditioners in the home and small office where the load is light.

Chapter 30. Load Estimate and Equipment Selection for Commercial Installation—Analysis of load estimate and equipment selection problem for installations in commercial establishments which have heavier load conditions.

Chapter 31. Air Movement—Ventilation Requirements—Quantity of outside air. Total air. Distribution of air.

Chapter 32. Design of the Distribution System—Methods of designing refrigerant, steam, chilled water, forced hot water, gravity hot water, gravity hot air, conditioned air, and residential and industrial forced air distributing systems.

Manual A-7 contains 96 pages and costs $1.00 in the U. S. A.*

Complete Data Book

MANUAL A-8 will contain all of the necessary tables used by the air-conditioning engineer and will be arranged for easy reference. This book will be ready early in 1939. Price $1.00.

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